4. A Monograph of *Limnaina* and *Euplœina*, two Groups of Diurnal Lepidoptera belonging to the Subfamily Euplœinæ; with Descriptions of new Genera and Species. By F. Moore, F.Z.S., A.L.S., &c.

Part I. *Limnaina*.

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(Plates XXIX–XXXII.[1])

The group of Butterflies here monographed has, by modern authors, been arranged under the subfamily name of Danainæ. By Linnæus (Syst. Nat. 1758, p. 470) they were placed in the second division of his Papiliones Danai, namely in that of the *D. festivi*, his first division, containing the "Whites" or modern Pierinæ, being the *D. candidi*.

Esper in 1777 (Die Schmett. i. p. 53) having figured several species of Pierinæ under the generic term *Danaus*, both Fabricius (Ent. Syst. iii. p. 39, 1793) and Weber (Nomen. Ent. pp. 99, 106, 1795) having also entirely separated the *D. festivi* from the *D. candidi* under the name of *Festivi*, and Cuvier (Tableau Elément. p. 590, 1798) having cited species of Pierinæ only as Danai, it follows that these authors, having thus restricted the Danai of Linnæus to the *D. candidi* (or modern Pierinæ), the term "Danainæ" cannot be retained for the present subfamily.

The following summary of the labours of subsequent authors will help to show the progress made in the study of this interesting group of Butterflies.

Latreille in 1805 (Hist. Nat. des Crust. et Insectes, xiv. p. 108) established his genus *Danaida*, giving as the type *Papilio plexippus* (one of the species mentioned in the Linnean division *D. festivi*), and citing America as the habitat of that species. In 1807 he altered this name to *Danais*, and in 1809 to that of *Danaus*[2].

In 1807 Fabricius (Illiger's Mag. vi. p. 280) established his genus *Euplœa*, giving as the types the *P. plexippus* and *P. similis* of Linnæus, and *P. corus*, a species of his own.

Hübner (Verz. bek. Schmett. pp. 14–17, 1816) arranged the group of the then described species in his second Stirps of the tribe Nymphales, under the name of Limnades—equivalent to the Linnean *Danai festivi* and the Fabrician *Festivi*—his first stirps being the Nereides, comprising the Heliconii of the later authors. The species known to him are divided into three sections, the first and second being equivalent to the *Danais* and *Hestia* of Doubleday, and the third to *Euplœa* of the same author; the species of the first and second sections are arranged under the briefly characterized genera *Amauris*, *Hestia*, *Euplœa*, and *Anosia*, those of the third section under *Trepsichrois*, *Crastia*, and *Salpinx*.

[1] Plates XXIX.–XXXII. will be given along with Part II. of the present paper, read May 1st.

[2] See notes to genus *Anosia*, p. 234 *postea*.

In 1819 Godart, in vol. ix. of the 'Encyclop. Méthodique,' redescribed the then known species, under the genus *Danais*.

The next author in point of date is Horsfield, who, in 1828, published the first part of the 4to Catalogue of the Lepidoptera in the Museum of the East-India Company, and on plate 3 of that work contributed illustrations of the larvæ of five species which he reared in Java.

In 1836, Boisduval ('Species général des Lépidoptères,' p. 165) arranges the group in his seventh family of the Rhopalocera.

Doubleday and Hewitson, in their grand work 'The Genera of Diurnal Lepidoptera,' p. 84 etc. (1847), limited the Danaidæ to the three genera *Euplœa*, *Danais*, and *Hestia*, placing *Hamadryas* at the end of the family Heliconidæ. In *Euplœa* the species enumerated are 37 in number; and these are arranged in succession, mostly according to the presence of the "sexual mark" or, as it is termed, "vitta" on the inner margin of the fore wing in the male. In *Danais*, these authors arrange the species into four unnamed groups, which they state to be "easily distinguished in general by the form and markings of the wings, independently of slight structural differences." The first group contains the species named *phædon*, *ægialea*, *echane*, *niavius* and its allies, "all African species, the males of which have a patch of peculiarly formed scales situated on the submedian nervure of the hind wing." The second group is composed mostly of the fulvous species, which have the sexual spot on the first median nervule, viz. *gilippus*, *erippus*, *chrysippus*, *plexippus*, *affinis*, &c. The third group contains "the species having the sexual spot upon the first median nervule or submedian nervure," viz. *aglea*, *cleona*, *melissa*, *similis*, *limniace*, *juventa*, *tytia*, *albata*, &c. In the fourth group are placed those species in which the sexual spot is absent.

In the Rev. et Mag. Zool. 1853, M. Lucas described several new species of the genus *Euplœa*.

In 1857, in the 8vo Catalogue of Lepidoptera of the East-India Company's Museum, pp. 121 to 135, I enumerated the species of *Danais*, *Euplœa*, *Ideopsis* (n. gen.), and *Hestia* then in the collection, described several new species, and figured various larvæ and pupæ.

In 'Exotic Butterflies,' vols. ii. and iii. 1858–66, Hewitson described and figured some very interesting new species of *Euplœa*.

In 1862, Mr. Bates published, in the Transactions of the Linnean Society, vol. xxiii. part 2, his "Contributions to the Insect fauna of the Amazon valley." In this memoir the systematic positions of the subfamilies Heliconinæ and Danainæ (including the Danaoid Heliconinæ) are most laboriously treated of, the Danaoid Heliconinæ being placed at the head of the Order Lepidoptera. In this memoir also Mr. Bates makes known the extraordinary phenomenon of mimicry occurring in the Heliconidæ and in other families of Butterflies, as well as in Moths.

In his 'Prodromus Systematis Lepidopterorum,' published in 1865, Herrich-Schäffer places the HELICONINA and DANAINA as the first and second families of the Butterflies. In Heliconina, besides

the true Heliconidæ, he groups those genera separated by Mr. Bates as Danaoid Heliconinæ, as well as the genera *Hamadryas*, *Euplœa*, and *Hestia*, restricting the Danaina to the genus *Danais* only.

In January 1866 Mr. Butler (Proc. Zool. Soc. 1866, pp. 43–59) published his "Monograph of the Genus *Danais*." This monograph, which is a revision of the species known to the author at that time, is also accompanied with descriptions and figures of new species contained in the British-Museum collection. All the species are here arranged under *Danais*, which is divided into four uncharacterized numerical sections, as follows:—1st. Section, comprising the *Amauris* group; 2nd section, the American species *berenice*, *gilippus*, &c., *chrysippus*, *plexippus* (*genutia*), and allies; 3rd section, *similis*, *limniace*, *aglea*, *melaneus*, *cleona*, &c.; 4th section, *gaura* and *daos*.

This monograph was followed in March by a Supplement (P. Z. S. 1866, pp. 171–175) enumerating and describing other species, characters being added (founded chiefly upon the colour and pattern) to the four sections as given above.

In May of the same year Mr. Butler published (P. Z. S. 1866, pp. 268–302) a "Monograph of the genus *Euplœa*," containing also descriptions and figures of new species in the British-Museum collection. The species are here arranged under *Euplœa*, which is broken up into ten divisions, characterized by their colour, form, and pattern of markings.

In the following year Mr. Butler also published (Trans. Ent. Soc. 1867, pp. 467–484) a "Monograph of the genus *Hestia*," containing descriptions of new species, and also a tabular résumé of all the species of family Danaidæ then described.

Dr. Felder, in the 'Reise der Novara,' Lepidoptera, part ii., describes and figures a number of species of Danainæ. As the date of publication of this part of the 'Reise der Novara' has been much discussed by Lepidopterists, the following remarks may not here be out of place.

Of part ii. of this work, though it bears the date of 1865 upon the title-page, the actual issue by the publishers appears not to have been effected till the beginning of 1867. There is no entry of it in the 'Zoological Record' for 1865. In the 'Record' for 1866 (published in 1867), the compiler of the list of works on Lepidoptera states (p. 433) that "this part was not procurable in 1866, and that he had been informed that an application for it made in February 1867 was unsuccessful." This is surely sufficient to show that Part ii. was not issued for sale, and therefore *not published*, at the date specified on its title-page. The date there so given may be that of the completion and lettering of the last plates (pl. 47 bearing that of Oct. 1865), which possibly may be considered as being equivalent to our mode of publication.

In 1869 was published the British-Museum "Catalogue of Diurnal Lepidoptera described by Fabricius," compiled by Mr. Butler, in which the species of Danainæ are enumerated, accompanied by the original Fabrician descriptions.

From 1870 to 1877 numerous collections, from various eastern countries, containing new species of Danainæ were received at the British Museum. These were described by Mr. Butler as follows:—

Ann. & Mag. Nat. Hist. ser. 4, vol. v. p. 357, 1870. New species of *Euplœa* and *Danais* from the South-Sea Islands.

Trans. Ent. Soc. 1875, p. 2. Species from Australia of a n. g. *Calliplœa*.

Ditto, 1876, p. 240. Species from New Guinea.

P. Z. S. 1876, p. 765. Species of *Euplœa* and *Calliplœa* from New Guinea.

P. Z. S. 1877, p. 466. The same.

P. Z. S. 1877, p. 810. Species of *Salpinx* from Formosa.

Ann. & Mag. Nat. Hist. ser. 4, vol. xx. 1877, p. 348. *Euplœa* from Lifu, Loyalty Islands.

In 1871 Mr. Kirby issued his 'Syn. Catal. of Diurnal Lepidoptera,' wherein the Danainæ are all arranged under the genera *Hestia*, *Ideopsis*, *Danais*, *Euplœa*, and *Hamadryas*, which are followed by the genera of Danaoid Heliconinæ.

Hoppfer (Stettin. ent. Zeit. 1874) described some new species of Danainæ from Celebes.

Mr. Druce, in Proc. Zool. Soc. 1873 & 1874, described some Siamese and Bornean species.

Mr. Salvin and Mr. Godman also received several very interesting collections, contributing descriptions of the Danainæ as follows :—

P. Z. S. 1877, p. 140. New Euplœas from Duke-of-York Island.

P. Z. S. 1878, pp. 643, 733. *Danais* and *Euplœa* from New Guinea, New Ireland, and New Britain.

P. Z. S. 1879, p. 155. The same.

P. Z. S. 1880, p. 183. A new *Danais* from E. Africa.

Kirsch, in Mitth. Mus. Dresden, i. (1877), contributes descriptions and figures of several new species from Papua.

In 1878 a memoir on the "Butterflies hitherto referred to the genus *Euplœa*" was published in the Journ. Linn. Soc., Zool. vol. xiv. pp. 290–303, by Mr. Butler. In this paper the species are arranged under seven genera, three of which are new, the peculiar "sexual mark," or scent-producing organ of the male insect, being taken, for the first time, as the character for their separation.

In the 'Biologia Centrali-Americana' (1879) Messrs. Salvin and Godman enumerate and describe the species of Danainæ occurring in that region.

In part 1 of my 'Lepidoptera of Ceylon,' published in 1880, are described and figured the species inhabiting that island. In this work these species are arranged under ten genera, seven of which are new, the "sexual mark" being used as the primary character for the genera.

In 1882 (Ann. Nat. Hist. ser. 5, vol. x. p. 36) Mr. Butler contributes additional descriptions of twelve new species of Danainæ from Duke-of-York Island and New Britain.

In 1882 Mr. Distant published part 1 of his 'Rhopalocera Malayana,' wherein are fully described and figured all the species

found in the Malay peninsula. These are arranged under the five genera *Hestia*, *Ideopsis*, *Radena*, *Danais*, and *Euplœa*, the two latter genera being further separated into sections, founded upon the "sexual mark" of the male.

The last work to be enumerated is the 'Lepidoptera of India, Burmah, and Ceylon,' published at Calcutta in 1882, by Major Marshall and L. de Nicéville. These authors give copious details of the characters of the subfamily Danainæ, keys for the determination of the genera and species, and very ample descriptions of the several genera and species, which are also accompanied with notes on their habits and geographical distribution, together with some exceedingly well-executed figures. By these authors the Danainæ are divided into the four genera *Hestia*, *Ideopsis*, *Danais*, and *Euplœa*, the two latter genera being sectionized into named groups, which are based on the "sexual mark" in the males, as pointed out and named by Mr. Butler and myself.

When studying this subfamily of Butterflies in 1879, preparatory to describing the species for my work on the Lepidoptera of Ceylon, I separated the whole of the species then in my collection into groups, according to the presence and position of the "sexual mark" or "scent-producing organ" in the male insect. Having thus separated the species into such groups, I was then much surprised to observe that this operation had placed before me several species in each group which bore an extraordinary resemblance, in the pattern of the markings on the wings, to certain species which I had arranged in the other groups.

Having thus taken these "sexual marks" or, as they are now known to be, "scent-producing organs" as the primary structural character for separating the species of the old genus *Danais* and *Euplœa* into minor generic groups, these assemblies of species, thus grouped, brought to my mind at once the fact that here were evident illustrations of a form of mimicry occurring between closely related groups, and that, too, *within* a protected family of Butterflies, or, more extraordinary still, *between species of the same genera*, as it would then appear, if the species are restricted to *Danais* and *Euplœa* respectively.

At that time I had forgotten that this phenomenon of mimicry *between related genera* had been observed by my friend Mr. Bates among the Danaoid Heliconidæ; but subsequently, on again working with his memoir in the Linnean 'Transactions' before me, I became aware of his discovery.

This analogous form of mimicry, occurring in *Danais* and *Euplœa*, had, however, not previously been recorded. Certain species, it is true, when being described, were noted by Mr. Butler as having a resemblance to certain other isolated species.

Since my own observations were thus made, I have had the opportunity of showing and pointing out some of these mimetic groups in *Euplœa* to my friends Mr. Bates, Mr. Meldola, Mr.

Distant, and others; and these facts have since served as materials for discussion in certain recent articles on mimicry in Butterflies[1].

The extent to which this form of mimicry exists among the species of the old genera *Danais* and *Euplœa* will be better understood by an examination of the accompanying Tables of the five primary groups into which I have divided each of these old genera.

In these Tables the names of certain genera and species in each of these five groups are given, and the names of those genera and species, *inhabiting the same locality*, which imitate them.

These Tables were chiefly compiled from actual inspection of the several species, chiefly at the British Museum, where I had a good opportunity, by the kindness of the officers of the Zoological Department, of examining (mostly at the same time), besides the contents of their own cabinets, together with those in my own collection, Boisduval's types, Lucas's types, several of Dr. Felder's types, a large series from the collections of M. Oberthür, G. Semper, and Messrs. Salvin and Godman, all of which were most generously confided to my care for examination[2].

This imitative character pervades all the groups into which I have divided the species hitherto arranged under *Danais* and *Euplœa*; and, in the Euplœina, so far as I have yet verified by actual comparison, it would appear most numerously so in Group A (see Table II.), the males of which have *no "sexual mark"* or "scent-producing organ" on the upper side of the wings, in Group B (see Table III.), the males of which possess *one "sexual mark" on the fore wing*, in Group D (see Table V.), the males of which possess *one "sexual mark" on the fore wing and a glandular patch on the hind wing*, and in Group E (see Table VI.), in which, though it contains only three genera, the species are numerously mimicked. The least amount of imitativeness yet observed and verified appears in Group C (see Table IV.), the males of which possess a *glandular patch on the hind wing* only.

On further analysis Table I. shows that, in the Limnaina, of the five groups into which the old genus *Danais*, *Hestia*, &c., have been divided, a certain number of the species are mimicked by others within these groups. These instances are but few, considering the large number of species therein, and show most clearly their highly protected condition.

Table I. A. embraces the names of certain species of the old genus *Danais* that are mimicked by species of the old genus *Euplœa*. The few species here noted would appear to indicate how small must be the necessity for attainment of further protection in the numerous species of these two highly protected genera.

Table II., Group A (*no sexual mark*). Of the 13 genera into which I have divided the species embraced within it, the second

[1] See W. L. Distant, Rhop. Malayana, p. 33 (1882); R. Meldola, Ann. Nat. Hist. 1882, vol. x. p. 417; W. L. Distant, Ann. Nat. Hist. 1883, vol. xi. p. 43. See also Wallace, 'Nature,' May 25, 1882.

[2] These Tables could have been much extended had it been possible to have brought the above collections together at the present moment.

genus is mimicked by a species in one of the groups into which the old genus *Danais* has been separated; of the others, 11 genera are mimicked by species of the other groups into which the old genus *Euplœa* has been divided.

In Table III., Group B (*one "sexual mark" on the fore wing*) is divided into 15 genera: 11 of these are mimicked by species of the other groups.

In Table IV., Group C (*glandular patch on the hind wing only*) is divided into 4 genera, 3 of which are mimicked by species of the other groups.

In Table V., Group D (*one sexual mark on the fore wing, and a glandular patch on the hind wing*) is divided into 12 genera, 9 of which are mimicked by species of the other groups.

In Table VI., Group E (*two sexual marks on the fore wing*) is divided into 3 genera, each of which genera and mostly all the species, are mimicked by species of the other groups.

Following these Tables I have drawn out one (Table VII.) in which are given "*typical examples of a mimetic set of species*, collated from each of the five groups into which *Euplœa* has been primarily divided. This Table also shows a comparative view of their structural characters.

Table I.—Mimetic Species in Limnaina.

No sexual mark or scent-producing organ in hind wing of male.	One sexual mark on submedian vein.	One sexual mark between median and submedian veins.	Two sexual marks, median and submedian veins.	Two sexual marks, submedian and internal veins.	Locality.
Ideopsis anapsis	.....	.....	Ravadeba phyle.	.....	Luzon.
—— chloris	.....	.....	R. cleone ...	.....	Celebes.
	Amauris, sp.?	Melinda formosa.	.....	.....	E. Africa.
Radena similis	.....	Tirumala limniace.	.....	.....	China, Formosa.
—— exprompta	.....	T. limniace ..	.....	Chittira fumosa	Ceylon.
—— vulgaris	.....	T. melissa ...	.....	.....	Java.
—— juventa.....	.. ...	T. conjuncta.	.....	.....	Java.
—— luzonica	.....	T. orientalis.	.....	.....	Luzon.
—— ishma	.....	T. ishmoides.	.....	.....	Celebes.
			Parantica grammica	Caduga larissa.	Java.
			P. melanoides	C. melaneus..	N.E. India.
			P. aglea	C.nilgiriensis	Malabar.

Table I. A.—Mimetic Species between Limnaina and Euplœina.

Limnaina.	Euplœina.					Locality.
	Group A.	Group B.	Group C.	Group D.	Group E.	
Ideopsis vitrea ...	.....	Bibisana configurata.	.....	.....	.....	Celebes.
Berethis phædon	Vonona euphon.	.....	.....	.....	.....	Mauritius.
Salatura ferruginca.	.....	Rasuma guerinii.	Calliplœa jamesii.	.....	Stictoplœa doleschallii	N. Guinea.
—— insolata.....	.....	Chirosa brenchleyi.	.....	.....	.....	Solomon Isles.
—— mytilene ...	Patosa funerea.	.....	.....	.....	.....	N. Guinea.
—— biseriata ...	.....	Crastia illudens.	.....	.....	.....	Duke-of-York Isles.
Tirumala septentrionis.	.....	.....	Trepsichrois linnæi ♀.	.....	.....	India, Burmah, Malacca.
—— melissa	.....	.....	T. claudia ♀.	.....	.....	Java.
—— orientalis ...	.....	.....	T. diocletia ♀.	.....	.....	Luzon.

Table II.—Mimetic Species in Euplœina (Group A.).

Group A.	Group B.	Group C.	Group D.	Group E.	Locality.
Vonona euphon [1]	.....	.....	.....	.....	Mauritius.
Niparia helcita	Chanapa corinna.	Calliplœa niveata.	.....	Doricha sylvester.	New Caledonia, N. Australia.
Gamatoba nox	.....	.....	.....	Stictoplœa pulla.	Aru Islands.
Patosa batesii	Chirosa pierretii.	.....	.....	S. immaculata.	New Guinea.
Oranasma lugens	Andasena orope.	Calliplœa hyems.	.....	.....	New Guinea, Timor.
Tronga crameri.....	A. suluana.	.....	Isamia ægyptus.	.....	N. Borneo.
—— brookei	.....	.....	I. lowei	.....	Borneo.
—— bremeri.....	Crastia distantii.	.....	I. chloe.	.....	Malay peninsula.
—— marsdeni	.....	.....	I. singapura.	.....	Singapore.
—— moorei	.....	.....	I. sophia ...	.....	Sumatra.
—— kinbergii	C. amymone.	.....	.....	.....	China.
Sariboa grayi.....	Chirosa vicina.	.....	Hirdapa assimilata.	.....	Aru.
Vadebra climena	Betanga duponchelii.	.....	.....	.....	Amboyna, Ceram.
—— honesta.....	.....	... ..	Saphara ænea	.....	Solomon Islands.
Gamatoba alecto	B. megæra ...	.....	.....	.....	Ceram.
—— cerberus	Crastia illudens.	.....	.....	.....	New Ireland.
Menama tavayona ...	Penoa limborgii.	.....	Isamia margarita.	Stictoplœa harrisii.	British Burmah.

[1] Mimicked by *Berethis phædon*. See Table I. A.

Group A.	Group B.	Group C.	Group D.	Group E.	Locality.
Menama buxtonii	P. Pinwillii .	.....	.....	.....	Sumatra.
Sabanasa cratis.....	.....	Trepsichrois diocletia.	.....	.....	Philippines.
Adigama ochsenheimeri.	.....	Euplœa gyllenhalii.	Tiruna ochsenheimeri.	.....	Java.
—— malayica	.....	E. phœbus.	.....	.....	Malay peninsula.
—— scudderi	.....	E. butleri.	.....	.....	Borneo.

Table III.—Mimetic Species in Euplœina (Group B.).

Group B.	Group A.	Group C.	Group D.	Group E.	Locality.
Chanapa corinna	Nipara helcita.	Calliplœa niveata.	.....	Doricha sylvester.	N. Australia.
Andasena eleutho.....	.....	.....	.....	D. pelor.....	Australia.
—— orope.....	Oronasma lugens.	C. hyems ...	.....	.....	Timor, New Guinea.
—— lucasii	.....	.....	Nacamsa meldolæ.	.....	Mindanao.
—— swainsonii.....	.....	.....	N. simillima.	.....	Luzon.
—— suluana.....	Tronga crameri.	.....	Isamia ægyptus.	.....	N. Borneo.
Bibisana horsfieldii ...	.....	.....	Selinda vollenhœvii.	.....	Celebes.
—— diana.....	.....	.....	Tabada hyacintha.	.....	Celebes.
Bctanga duponchelii...	Vadebra climena.	.....	.....	.....	Amboyna, Ceram.
—— megæra.....	Gamatoba alecto.	.....	.....	.....	Ceram.
Penoa deione.....	.....	Trepsichrois linnæi, ♂.	Isamia splendens.	Stictoplœa binotata.	N.E. Bengal.
—— limborgii	Menama tavoyana.	.....	I. margarita.	S. harrisii ...	British Burmah.
Crastia core	.....	.....	Pademma kollari.	Narmada coreoides.	India.
—— asela	.....	.....	P. sinhala ...	N. lankana...	Ceylon.
—— grammifera	.....	.....	Isamia chloe.	.....	Malay peninsula.
—— inconspicua	.....	.....	.....	Stictoplœa inconspicua	Sumatra.
—— distantii	Tronga bremeri.	.....	I chloe	.....	Malay peninsula.
—— amymone	T. kinbergii .	.....	.....	.....	China.
—— illudens.....	Gamatoba cerberus.	.....	.....	.....	New Ireland.
Mahintha subdita.....	.....	.....	Pademma masoni.	.....	Tenasserim.
Chirosa brenchleyi ...	.....	.....	Hirdapa imitata.	.....	Solomon Is.
—— eurypon	.....	.....	H. fraterna..	.....	Ke Islands.
—— vicina	Sariboa grayi	.....	H. assimilata	.....	Aru.
—— pierretii	Patosa batesii.	.....	.....	.....	New Guinea.
Karadira andamanensis.	.....	.....	Tiruna rœpstorfii.	.....	Andamans.
Rasuma violetta	.....	Calliplœa jamesii.	.....	S. doleschallii.	New Guinea.

Table IV.—Mimetic Species in Euplœina (Group C).

Group C.	Group A.	Group B.	Group D.	Group E.	Locality.
Calliplœa niveata.....	Nipara helcita.	Chanapa corinna.	.....	Doricha sylvester.	N. Australia, New Caledonia.
—— pollita	.....	.....	.....	Stictoplœa lætifica.	Philippines.
—— hyems	Oronasma lugens.	Andasena orope.	.....	.....	Timor, New Guinea.
—— mazares	.....	.....	Selinda elusina.	.....	Java.
—— ledereri	.....	.....	Salpinx lazulina.	.....	Malacca.
—— jamesii	.....	Rasuma violetta.	.....	S. doleschallii	New Guinea.
Trepsichrois linnæi ♂	.....	Penoa deione	Isamia splendens	S. binotata...	N.E. Bengal.
—— diocletia ♂	Sabanasa cratis.	.....	.....	.....	Philippiues.
—— mulciber ♂	.....	.....	.....	S. tyrianthina	Borneo.
Euplœa gyllenhalii ...	Adigama ochsenheimeri.	.....	Tiruna ochsenheimeri.	.....	Java.
—— phœbus.....	A. malayica.	.....	.....	.....	Malay peninsula.
—— butleri	A. scudderi..	.....	.....	.... .	Borneo.

Table V.—Mimetic Species in Euplœina (Group D).

Group D.	Group A.	Group B.	Group C.	Group E.	Locality.
Saphara ænea	Vadebra honesta.	.....	.....	.....	Solomon Islands.
Tabada hyacintha ...	.....	Bibisana diana.	.....	.....	Celebes.
Selinda elusine	.....	.....	Calliplœa mazares.	.....	Java.
—— vollenhövii	.....	Bibisana horsfieldii.	.....	.....	Celebes.
—— mneiszeckii	.....	.....	.....	Stictoplœa gloriosa.	Celebes.
Hirdapa imitata	.....	Chirosa brenchleyi.	.....	.....	Solomon Islands.
—— fraterna	.....	C. eurypon...	.....	.....	Ké Island.
—— assimilata	Sariboa grayi.	C. vicina ...	.....	.....	Aru.
Salpinx vestigiata	.....	.....	.....	Stictoplœa picina.	Sumatra.
—— lazulina	.....	.....	Calliplœa ledereri.	.....	Malacca.
Isamia margarita.....	Menama tavoyana.	Penoa limborgii.	.....	Stictoplœa harrisii.	British Burmah.
—— ægyptus	Tronga crameri.	Andasena suluana.	.....	.....	N. Borneo.
—— lowei	T. brookei ...	.....	.....	.....	Borneo.

Table V. (*continued*).

Group D.	Group A.	Group B.	Group C.	Group E.	Locality.
Isamia chloe	T. bremeri ...	Crastia distantii & C. grammifera.	.....	.....	Malay peninsula.
—— singapura	T. marsdeni .	.....	.....	.....	Singapore.
—— sophia	T. moorei ...	.....	.....	.....	Sumatra.
—— splendens.....	.....	Penoa deione.	Trepsichrois linnæi ♂.	Stictoplœa binotata.	N.E. Bengal.
Pademma kollari	.....	Crastia core.	.....	Narmada coreoides.	India.
—— sinhala	.....	C. ascla	.....	N. lankana...	Ceylon.
—— masoni	.....	Mahintha subdita.	.....	.....	Tenasserim.
Nacamsa meldolæ ...	.....	Andasena lucasii.	.....	.....	Mindanao.
—— simillima	.....	Andasena swainsoni.	.....	.....	Luzon.
Tiruna rœpstorffii ...	.....	Karadira andamanensis.	.....	.....	Andamans.
—— ochsenheimeri ...	Adigama ochsenheimeri.	.....	Euplœa gyllenhalii.	.....	Java.

Table VI.—Mimetic Species in Euplœina (Group E).

Group E.	Group A.	Group B.	Group C.	Group D.	Locality.
Doricha sylvester.....	Nipara helcita.	Chanapa corinna.	Calliplœa niveata.	.....	New Caledonia, Australia.
—— pelor	.....	Andasena eleutho.	.....	.....	Australia.
Stictoplœa pulla	Gamatoba nox.	.....	.....	.....	Aru Islands.
—— immaculata	Patosa batesii.	Chirosa pierrettii.	.....	.....	New Guinea.
—— harrisii	Menama tavoyana.	Penoa limborgii.	.....	Isamia margarita.	British Burmah.
—— binotata	.....	P. deione	Trepsichrois linnæi ♂.	I. splendens.	N.E. Bengal.
—— inconspicua	.....	Crastia inconspicua.	.....	.....	Sumatra.
—— picina	.....	.....	.....	Salpinx vestigiata.	Sumatra.
—— tyrianthina	.....	.....	Tr. mulciber ♂.	.....	Borneo.
—— lætifica	.....	.....	Calliplœa pollita.	.....	Philippines.
—— gloriosa	.....	.....	.....	Selinda mniszeckii.	Celebes.
—— doleschallii	.....	Rasuma violetta.	C. jamesii.	.....	New Guinea.
Narmada lankana. ...	.....	Crastia ascla.	.....	Pademma sinhala.	Ceylon.
—— coreoides	.....	C. core.	.....	P. kollari.	India.

Table VII.—Typical Examples of the Mimetic Species in the various Groups of Euplœina.

Habitat.	Groups.	Structural Characters.					
		Sexual mark	Exterior margin	Posterior margin	Upper discocellular	Lower discocellular	Discocellular veinlet
	Group A.						
Malay peninsula.	Tronga bremeri	none.	uneven.	very convex.	bent.	perfect.	from upper.
	Crastia distanti	one on fore wing.	uneven.	convex.	bent.	perfect.	from upper.
	Isamia chloe	one on fore wing and patch on hind wing.	uneven.	convex.	bent.	perfect.	from upper.
	Group B.						
India.	Crastia core	one on fore wing.	uneven.	nearly straight.	bent.	perfect.	from upper.
	Pademma kollari	one on fore wing and patch on hind wing.	oblique.	convex.	concave.	perfect, concave.	none.
	Narmada coreoides	two on fore wing.	oblique.	slightly convex.	bent.	perfect.	from upper.
	Group C.						
N.E. India.	Trepsichrois linnæi	a patch on hind wing.	uneven.	slightly convex.	bent.	perfect.	from upper.
	Penoa deione	one on fore wing.	convex.	convex.	bent.	perfect.	from upper.
	Isamia splendens	one on fore wing and patch on hind wing.	oblique.	convex.	bent.	perfect.	from upper.
	Stictoplœa binotata	two on fore wing.	convex.	convex.	bent.	perfect.	from upper.
	Group D.						
British Burmah.	Isamia margarita	one on fore wing and patch on hind wing.	oblique. uneven.	very convex.	bent.	perfect.	from upper.
	Menama tavoyana	none.	uneven, oblique.	convex.	bent.	perfect.	from upper.
	Penoa limborgii	one on fore wing.	convex.	convex.	bent.	perfect.	from upper.
	Stictoplœa harrisii	two on fore wing.	convex.	convex.	bent.	perfect.	from upper.
	Group E.						
Sumatra.	Salpinx vestigiata	one on fore wing and patch on hind wing.	convex.	very convex.	concave.	concave, perfect.	none.
	Stictoplœa picina	two on fore wing.	convex.	convex.	bent.	perfect.	from upper.

Subfamily EUPLŒINÆ.

Danai festivi, Linnæus.

Festivi, Fabricius, Ent. Syst. iii. p. 39 (1793); Turton, Syst. Ent. ii. p. 54 (1806).

Limnades, Hübner, Verz. bek. Schmett. p. 14 (1816).

Danainæ[1] of modern authors.

Euplœinæ, Moore, Lep. of Ceylon, p. 1 (1880).

Fore wing with the submedian vein double at its origin. Most genera also with an incipient or lengthened discoidal veinlet emitted within the cell of fore wing. Abdomen furnished with odoriferous anal tufts of hair. Larva smooth, with fleshy processes.

Group ——?

Danaoid Heliconidæ, Bates, Trans. Linn. Soc. xxiii. pp. 496 517 (1862).

This group of Butterflies I consider to be quite distinct from the next. They differ in the form of outline in the wings, and, though having similar venation in the fore wing, the basally forked submedian, and in most of the genera the more or less lengthened discoidal (or recurrent) veinlet (in some genera two such veinlets) emitted within the cell, and, although the hind wing possesses a more or less defined small precostal (or basal) cell, this latter wing has a much larger discoidal cell, and also has (in *Lycorea halia*) a single discoidal veinlet emitted within the cell; whilst in others (*Sais rosalis* and *Mechanitis lysimnia*) the costal and subcostal veins are amalgamated, and consequently the precostal cell is absent, and the discoidal veinlet within the cell is present; but in the former species (*Sais*) there are two such veinlets in both wings of the female, and two in fore wing of female *M. lysimnia*. In *Ithomia* (sp. ?) the costal and subcostal veins of the hind wing run close together from their base along edge of the margin, both wings also having a short discoidal veinlet emitted within the cell. In this group, the males, besides possessing odoriferous tufts of hair at the extremity of the abdomen, have in some genera an odoriferous tuft of hair also on the subcostal vein along the upper side of the hind wing[2].

[1] Linnæus used the name *Danaus* in both sections of his Papilio Danai (*D. candidi* and *D. festivi*). In 1777 Esper (Die Schmett. i. p. 53) used it as a generic name for species of Pierinæ, representing Linnæus's *D. candidi*; and in 1784 Esper (Natur. des Linneischen Systems, p. 214) again cites it for species of Pierinæ. Fabricius (Ent. Syst. iii. p. 39, 1793) and Weber (Nomen. Ent. pp. 99, 106, 1795) separated the modern Danainæ under the name of *Festivi*, and restricted the term *Danai* to the *D. candidi* of Linnæus. In 1798 Cuvier (Tableau Elément. d'Hist. Nat. p. 590) cites species of Pierinæ only under *Danai*. Panzer, in 1801 (Faun. Ins. Germ. Hefte 73–84, p. 11), also adopts *Danaus*, generically, for species of Pierinæ; and, in 1806, Turton (Gen. Syst. of Entom. p. 64) also restricts the *Danai* to species of Pierinæ. The name "*Danaus*," as applied by Latreille in 1805–09, cannot, therefore, be retained in this group of Butterflies.

[2] See Fritz Muller's "Notes on Brazilian Entomology" (Trans. Ent. Soc. 1878, p. 211), and translation by R. Meldola of Dr. Fritz Müller's paper on *Ituna* and *Thyridia*, in Trans. Ent. Soc. 1879, 'Proceedings,' p. xx.

I have not attempted the study of this group of American Butterflies further than what was necessary for the purpose of pointing out its distinction from the other groups.

Group Limnaina.

Males, in most genera, possessed with one or more glandular sacs or scent-producing organs on the hind wing. Hind wing also mostly with a more or less defined precostal cell. Abdomen furnished with odoriferous anal tufts of hair.

Larva smooth, with two or more pairs of subdorsal, long, slender, fleshy processes.

Key to the Genera of Limnaina.

	Sexual mark on hind wing	Upper discocellular vein of fore wing	Lower discocellular vein of fore wing	Discoidal veinlet of fore wing	Typical genera and species.
A.	*No "sexual mark" or scent-producing organ on hind wing.*				
	none.	bent.	perfect.	from upper discocellular, very short.	Hestia lynceus.
	none.	ditto.	ditto.	ditto.	Nectaria idea.
	none.	ditto.	ditto.	ditto, short.	Gamana daos.
	none.	ditto.	ditto.	ditto.	Ideopsis gaura.
	none.	ditto.	imperfect at upper end.	ditto.	Radena similis.
	none.	concave.	perfect, concave	none.	Cadytis vashti.
B.	*One "sexual mark" or scent-producing organ on hind wing.*				
a.	On submedian vein.	concave.	imperfect at upper end.	none.	Amauris niavius.
	ditto.	ditto.	ditto.	ditto.	Nebroda echeria.
	ditto.	ditto.	ditto.	ditto.	Berethis phædon.
	ditto.	ditto.	ditto.	ditto.	Lintorata menadensis.
b.	Between median and submedian veins.	straight.	bent, imperfect near upper end.	from lower discocellular, short.	Tirumala limniace.
	ditto.	ditto.	straight, imperfect at upper end	from middle of discocellulars, short.	Nasuma ismare.
	ditto.	ditto.	ditto.	ditto.	Melinda formosa.
	ditto.	bent.	imperfect.	from upper discellular.	Anosia plexippus.
	ditto.	straight.	straight, imperfect.	from middle of discocellulars, short.	Tasitia berenice.
	ditto.	ditto.	ditto.	ditto.	Limnas chrysippus.
	ditto.	bent.	ditto.	from upper discocellular, short.	Salatura genutia.

KEY TO THE GENERA OF LIMNAINA (*continued*).

C.	*Two "sexual marks" or scent-producing organs on hind wing.*				
	Sexual mark on hind wing	Upper discocellular vein of fore wing	Lower discocellular vein of fore wing	Discoidal veinlet of fore wing	Typical genera and species.
a.	On median and submedian vein.	straight.	bent, imperfect near upper end.	from lower discocellular, short.	Ravadeba cleona.
	ditto.	ditto.	ditto.	ditto.	Bahora philomela.
	ditto.	ditto.	ditto.	ditto.	Phirdana pumila.
	ditto.	ditto.	ditto.	ditto.	Asthipa vitrina.
	ditto.	ditto.	ditto.	ditto.	Parantica aglea.
	ditto.	ditto.	ditto.	ditto.	Mangalisa albata.
b.	On submedian and internal veins.	ditto.	ditto.	ditto.	Caduga tytia.
	ditto.	ditto.	ditto.	ditto.	Chittira fumata.

A. *No "sexual mark" or scent-producing organ on hind wing.*

Genus NECTARIA.

Nectaria, Dalmann, in Billb. Enum. Ins. p. 76 (1820); Moore, Lep. of Ceylon, i. p. 2 (1880).

Idea, Fabricius, Illiger's Mag. vi. p. 283 (1807); Godart, Enc. Méth. ix. p. 194 (1819).

Danaus (part.), Latreille, Gen. Crust. et Ins. iv. p. 201 (1809); Consid. Gén. C. et Ins. pp. 352, 440 (1810).

Hestia (part.), Hübner, Verz. bek. Schmett. p. 15 (1816).

Hestia, Doubleday & Hewits. Gen. D. Lep. p. 94; Distant, Rhop. Malayana, p. 5.

Wings semidiaphanous, large: fore wing broad, lengthened, triangular; costa slightly arched, apex quite convex, exterior margin oblique, waved, posterior margin short, slightly concave in middle; costal vein extending to half its length; first subcostal branch emitted at about one fourth before end of the cell and anastomosed to costal near its end, second branch from near end of the cell, third and fourth at equal distances beyond, the fourth terminating above and the fifth below the apex; cell long; upper discocellular inwardly oblique, bent near subcostal and in the middle, the lower angle produced to a point within the cell, lower discocellular outwardly convex, first radial from upper angle and second from below lower angle of upper discocellular; three median branches wide apart; submedian very recurved, basal veinlet short, slender. Hind wing lengthened, oval; costal margin slightly waved, anal angle convex; cell broad; costal vein short, precostal forked; subcostal branches wide apart, first very short; discocellulars bent outward at their middle, the radial emitted from the angle; median branches wide apart; submedian and internal vein slightly recurved. Body

long, slender; palpi porrect, pilose above and beneath, tip pointed, very minute; legs long, slender; antennæ slender.

Larva (*N. malabarica*) with four pairs of long fleshy aments.

Type *N. idea*.

1. Nectaria idea.

Papilio idea, Clerck, Icones, ii. pl. 38. f. 1, ♂ (1764); Joh. Amœn. Acad. vi. p. 405; Linn. Mus. Ulr. p. 238; id. Syst. Nat. i. 2, p. 758 (1767); Cram. Pap. Exot. iii. pl. 193. f. A, B, ♀; Donov. Ins. Ind. pl. 24.

Idea idea, Fabr. Syst. Glossat., Illiger's Mag. vi. p. 120 (1808).

Danaus idea, Latr. Gen. Crust. et Ins. iv. p. 201 (1809); Consid. Gén. Crust. et Ins. p. 440 (1810).

Limnas (Thalassica) idea, Hübner, Samml. exot. Schmett. i. pl. 18 (1806).

Hestia idea, Hübn. Verz. bek. Schmitt. p. 15; Butler, Trans. Ent. Soc. 1867, p. 467; Aurivillius, Kongl. Vet.-Akad. Handl. 1882, p. 52.

Hab. Ceram, Amboina (*Wallace*).

2. Nectaria aza.

Idea aza, Boisduval, Voy. Astr., Lép. p. 106 (1832).

Papilio idea, Cramer, Pap. Exot. iv. pl. 362. f. D, ♀.

Hestia aza, Butler, Trans. Ent. Soc. 1867, p. 468.

Hab. Bouru; Sula Is. (*Wallace*).

3. Nectaria agelia.

Idea agelia, Godart, Enc. Méth. ix. p. 195 (1819); Lucas, Lép. Exot. pl. 48. ♀.

Hab. Batchian (*Wallace*). In coll. H. G. Smith.

4. Nectaria d'urvillei.

Idea d'urvillei, Boisduval, Voy. Astr., Lép. p. 107, pl. 3. f. 4 (1832).

Hestia d'urvillei, Doubleday & Hewits. Gen. D. Lep. pl. 13. f. 3, ♂; Butler, Trans. Ent. Soc. 1867, p. 469.

Hab. Aru; New Guinea.

The New-Guinea form has darker wings, the veins and all the markings being more prominent.

5. Nectaria blanchardii.

Idea blanchardii, Marchal, Rev. Zool. 1845, p. 168, ♂.

Hestia blanchardii, Butler, Trans. Ent. Soc. 1867, p. 468.

Idea tondana, Vollenhoven, Tijd. voor Ent. iii. p. 41, pl. 4 (1860).

Hab. Borneo (*Marchal*); Celebes (*Brit. Mus.*).

6. Nectaria leuconoe.

Idea leuconoë, Erichson, Nova Acta Acad. Nat.-Cur. xvi. p. 283 (1834).

Hestia leuconoë, Doubleday & Hewitson, Gen. D. Lep. p. 95 pl. 13. f. 2 (1847); Butler, Trans. Ent. Soc. 1867, p. 469.

Hab. Philippines (Mindanao); Borneo.

7. Nectaria godmani.

Idæa godmani, Oberthür, Trans. Ent. Soc. Lond. 1879, p. 230.

Hab. Sangir Island.

8. Nectaria clara.

Hestia clara, Butler, Trans. Ent. Soc. 1867, p. 469.

Hab. Tamsui, North Formosa (*Hobson*); ? Java; Billiton.

Sabalassa, n. g.

Fore wing in both sexes much produced and rounded at the apex; exterior margin very oblique, and in the male very abruptly concave in the middle, thus giving a different shape to this wing, as compared with *Nectaria* (*Idea*), though approaching that of *Hestia*. In pattern of markings it similates to *Nectaria*.

Sabalassa electra.

Hestia electra, Semper, Verh. Ver. Nat. Unt. Hamburg, iii. p. 106 (1878).

Male and female. Yellowish: fore wing much produced and rounded at the apex; veins and cell-streaks black; a black, irregular, angulated patch in middle of the cell and a broad lunular patch at its end; a narrow, waved-bordered, marginal band traversed by a row of yellowish spots; a discal transverse zigzag band, a small spot below the cell between middle and lower medians, and a pyriform spot between median and submedian. Hind wing with black veins and cell-streaks; a waved-bordered marginal band traversed by yellowish spots, a discal series of sagittate marks, the lower marks being slightly confluent with the veins at their upper angles.

Expanse, ♂ $5\frac{1}{4}$, ♀ $6\frac{1}{2}$.

Hab. Philippines (East Mindanao). In coll. G. Semper.

Genus Hestia.

Hestia, Hübner, Verz. bek. Schmett. p. 15 (1816).

Wings semidiaphanous: fore wing long, narrow, somewhat fusiform; costa much arched; cell narrow; first subcostal vein emitted at one fifth before end of the cell, and joined to costal near its end by a short cross branch; upper discocellular inwardly oblique, deeply concave in the middle, lower curved outward; upper radial from near subcostal, lower radial from below the angle in the middle of discocellulars; submedian with a short, slender, lower basal veinlet. Hind wing fusiform, narrow; cell narrow; veins mostly straight. Antennæ slender; apical joint of palpi prominent.

Type *H. lynceus*.

1. Hestia lynceus.

Papilio lynceus, Drury, Ill. Exot. Ent. ii. pl. 7. f. 1 (1773).

Idea lyncea, Godt. Enc. Méth. ix. p. 195.
Hestia lynceus, Hübner, Verz. bek. Schmett. p. 15 (1816).
Hab. Borneo. In colls. British Museum and F. Moore.

2. Hestia stolli.

Papilio idea, Stoll, Cramer's Pap. Exot. v. pl. 42. f. 1.

Intermediate between *H. reinwardtii* and *H. lynceus*. Wings comparatively shorter and narrower, the tint of ground-colour whitish, the veins broader black-lined than in *H. lynceus*; the discal spots and marginal markings are also broader than in *H. lynceus*; but neither the veins nor markings are so large and prominent as in *H. reinwardtii*.

Expanse, ♂ 6, ♀ $6\frac{1}{4}$ inches.
Hab. Java. In colls. British Museum and F. Moore.

3. Hestia reinwardti.

Hestia lynceus, Distant, Rhop. Malayana, pl. 1. f. 2, ♂ (1882).

Male and female. Differs from the Bornean *H. lynceus* in both wings being a quarter of an inch broader, as measured across the middle; the fore wing is also shorter; the hind wing much shorter, being considerably less produced externally, and the abdominal margin longer; the wings are very conspicuously blacker in tint; the veins in both wings are broader, and with the spots are of a deeper black and stand out more prominently, the spots being similar but larger.

Expanse, ♂, ♀ $6\frac{1}{4}$ inches.
Hab. Sumatra; Nias; Malacca. In colls. British Museum, H. G. Smith, and W. L. Distant.

4. Hestia logani.

Hestia lynceus (part.), Distant, Rhop. Malayana, p. 6 (1882).

Differs from *H. reinwardti* in both sexes having the wings comparatively narrower, the hind wing being more produced exteriorly; the ground-colour is also much paler and of a slight brownish fuliginous tint; all the veins are slenderly black-lined, the spots and border-markings being about one half less in size.

Expanse, ♂ $6\frac{1}{4}$, ♀ $6\frac{1}{2}$ inches.
Hab. Malacca; Penang. In coll. British Museum.

5. Hestia donovani, n. sp.

Compared with typical Bornean *H. lynceus*, this is paler in colour, the black veins narrower; markings similar, but all of half the size: fore wing with the cell-spot more quadrate, the discocellular angular spot very broad hindward, the discal series more rounded, the basal spot below the cell cordate, the marginal marks short. Hind wing with the cell and discal spot small and round, the basal spot below the cell crossed by the black streak.

Expanse, ♀ $4\frac{1}{2}$ inches.
Hab. Singapore. In coll. H. G. Smith.

6. Hestia druryi, n. sp.

Hestia idea, var., Doubleday & Hewitson, D. Lep. pl. 13. f. 1, ♂.

Nearest to *H. loganii*. Wings smaller; the veins more slenderly and less distinctly black-lined; all the spots much smaller; fore wing with the cell-spot triangular, the discocellular streak narrow, the discal row of spots more conical; the basal spot below the cell is broken into two smaller spots by the separating pale longitudinal streak; the marginal series of marks are comparatively longer and of less breadth. Hind wing with the cell-spot half the size, the discal series more conical; the basal spot below the cell is single and has no contiguous small spot below the slender streak, the marginal marks comparatively narrower.

Expanse $5\frac{1}{2}$ inches.

Hab. Sumatra. In colls. British Museum and F. Moore.

7. Hestia jasonia.

Hestia jasonia, Westwood, Cabinet of Oriental Entom. p. 87, pl. 43. f. 1 (1848); Butler, Trans. Ent. Soc. 1867, p. 470.

Nectaria jasonia, Moore, Lep. of Ceylon, p. 3, pl. 1. f. 1 (1880); Marshall & de Nicéville, Butt. of India &c. p. 27, pl. 3. f. 1, ♂.

Hab. Ceylon.

The specimens of *H. jasonia* are very variable in the tint of the ground-colour of their wings, some being almost greyish white, others dusky white, whilst some are fuliginous brown. The form of wings and pattern of markings in these differently coloured specimens do not vary to any appreciable extent. These differences in coloration may be the result of seasonal broods, of which probably there are two or more, as, according to Capt. Hutchison, this insect may be found on the wing all the year in the Western, Central, and Southern Provinces of the island.

8. Hestia agamarschana.

Hestia agamarschana, Felder, Reise der Novara, Lep. ii. p. 351, pl. 43. f. 7 (1867); Butler, Trans. Ent. Soc. 1867, p. 470; Moore, P. Z. S. 1877, p. 582; Marshall & de Nicéville, Butt. of India &c. p. 27 (1882).

Hab. Andaman Isles.

9. Hestia cadelli.

Hester cadellii, W. Mason, Journ. Asiatic Soc. Bengal, 1880, p. 225, pl. 13. f. 1, ♂, 1881, p. 244, ♀; Marshall & de Nicéville, Butt. of India &c. p. 28, pl. 4. f. 2, ♂ (1882).

Hab. Andaman Isles.

10. Hestia hadeni.

Hestia hadeni, W. Mason, Journ. Asiatic Soc. Bengal, 1880, p. 242, pl. 13. f. 2, ♀; Marshall & de Nicéville, Butt. of India &c. p. 29, pl. 4. f. 3, ♀.

Hab. Bassein, British Burmah.

11. Hestia linteata.

Hestia linteata, Butler, Trans. Linn. Soc. 2 ser. i. p. 536, pl. 69. f. 6 (1876–79); Distant, Rhopal. Malayana, p. 7, pl. 2. f. 1 (1882).

Hab. Malay Peninsula (Province Wellesley, Malacca).

12. Hestia malabarica.

Hestia malabarica, Moore, Ann. Nat. Hist. ser. 4, vol. xx. p. 46 (1877).

Hestia malabaricus et *lynceus*?, Marshall & de Nicéville, Butt. of India &c. pp. 25, 26 (1882).

Hab. S.W. India (Western Ghauts, Nilgiris, Travancore). In colls. F. Moore and British Museum.

The larva and pupa of *H. malabarica* were figured in the Catal. Lep. Mus. E.I. Co. pl. iv. f. 11, 11*a*, in error for those of *G. daos*. The figures there engraved were stated by Prof. Westwood to represent the transformations of *G. daos*; the drawings (now in the Library of the Entomological Society of London) were received by him from Capt. Hamilton; and the species in question was stated to be from the Tenasserim coast.

In a letter which I subsequently received from Mrs. Hamilton, this lady informed me that the drawings of the above-mentioned larva and pupa were made from specimens taken on the Cotiaddy Pass, in the Western Ghauts of Southern India, not in Tenasserim as stated by Prof. Westwood. This identity is also confirmed by other drawings of the metamorphoses of the same insect, now in my possession.

13. Hestia belia.

Hestia belia, Westwood, Cabinet of Oriental Entom. p. 75, pl. 37. f. 2 (1848); Moore, Catal. Lep. Mus. E.I. Co. i. p. 135, pl. 4. f. 12; Butler, Trans. Ent. Soc. 1867, p. 470.

Hab. Java.

14. Hestia hypermnestra.

Hestia hypermnestra, Westwood, Cabinet of Oriental Entom. p. 75, pl. 37. f. 1 (1848).

Idea hypermnestra (*jasonia*, var.), Vollenhoven, Tijds. voor Entom. iii. p. 43, pl. 3 (1860), ♂.

Hab. Borneo.

Gamana, n. g.

Wings semidiaphanous: fore wing long, narrow, somewhat fusiform; costa arched at base and apex; first subcostal vein emitted as a short branch obliquely up to costal at about one third before end of the cell, and terminating beyond its end; upper discocellular angled inward near its lower end and producing a short discoidal spur within the cell from the angle, lower discocellular outwardly oblique; first radial emitted from below subcostal at some distance beyond end of the cell, second from near angle of upper discocellular. Hind wing short, broad, oval, very convex externally; cell short;

costal vein long, extending to posterior angle of fore wing; first and second subcostal veins long. Antennæ short, slender, with a well-formed rounded club. Apical joint of palpi prominent.

1. Gamana daos.

Idea daos, Boisduval, Spec. Gén., Lép. i. pl. 24. f. 3 (1836), ♂.
Hestia eudora, Gray, Lep. Ins. Nepal, p. 10, pl. 9. f. 3 (1846), ♂.
Idea diardi, Voll. Tijd. voor Ent. iii. p. 44, pl. 2. f. 4 (1860), ♂.
Ideopsis daos, Moore, Catal. Lep. Mus. E.I. Co. i. p. 134 (1857); Distant, Rhopal. Malayana, p. 8, pl. i. f. 3, 4, ♂ ♀ (1882).

Hab. Malay peninsula (Province Wellesley, Malacca); Penang; Singapore; Sumatra; Borneo.

2. Gamana costalis, n. sp.

Male. Smaller than Malayan specimens; veins of both wings conspicuously narrower, not being black-bordered at their base. On the fore wing the costal border is blacker, being completely covered basally; the discocellular spot and the submarginal and marginal spots are of half the size of those in Malayan specimens: hind wing with the discocellular, submarginal, and marginal spots also about half the size.

Expanse, ♂ $3\frac{1}{4}$ inches.

Hab. Nias Island, W. coast of Sumatra. In coll. British Museum.

A Sumatran female in the British Museum, and another in my collection, which may possibly belong to this species, are both smaller and darker, and have the veins more broadly black-bordered than Malayan females of *G. daos*.

Genus Ideopsis.

Ideopsis, Horsf. & Moore, Catal. Lep. E.I. Co. i. p. 133 (1857).
Danais, sect. 4, Doubleday, Gen. D. Lep. p. 90.

Wings semidiaphanous: fore wing narrow, triangular; costa in male slightly arched; first subcostal branch emitted at about one third before end of the cell and anastomosed to costal, second at some distance before end of the cell; upper discocellular bent inward near its lower end and producing a short discoidal spur within the cell from the angle, lower discocellular outwardly oblique; first radial emitted from below the subcostal at some distance beyond end of the cell, second radial from near angle of the upper discocellular. Hind wing bluntly oval; costal margin long, nearly straight; abdominal margin long; venation similar to *Gamana*. Antennæ with a short, broad, flat, spatular club. Apical joint of palpi pointed.

Type *I. gaura*.

1. Ideopsis gaura.

Idea gaura, Horsfield, Catal. Lep. E.I. Co. (1829), pl. 6. f. 1; Boisd. Spec. Gén. Lép., i. pl. 11. f. 11 (1836).

Hab. Java.

2. Ideopsis glaphyra, n. sp.

Ideopsis glaphyra, Semper, MS.

Intermediate between *I. gaura* and *I. anapis*.

Male. Fore wing differs from *I. anapis* in the three pale streaks between subcostals and upper median being interrupted with black, the excavated streak between upper and middle median extending to the base of the interspace, in the same manner as the two lower pale interspaces. Hind wing with similar spots, the black discal spots being joined to the marginal band by short streaks; a black spot at end of the cell.

Female. Fore wing with broader and larger entire upper pale streaks, extending to base of the interspaces. Hind wing with the discal spots as in male, the cell-spot being obsolete.

Expanse, ♂ 3, ♀ $3\frac{3}{8}$ inches.

Hab. Philippines (Mindanao). In coll. G. Semper.

3. Ideopsis anapis.

Danais anapis, Felder, Wien. ent. Monats. v. p. 300 (1861).

Ideopsis anapis, Felder, Reise der Novara, Lep. ii. p. 351, pl. 43. f. 6 (1867).

Hab. Philippines (Luzon).

4. Ideopsis hewitsoni.

Ideopsis hewitsonii, Kirsch, Mitth. zool. Mus. Dresden, i. p. 114, pl. 6. f. 1 (1877), ♂.

Hab. New Guinea (Mysore Island).

5. Ideopsis vitrea.

Danais vitrea, Blanchard, Voy. Pôle Sud, p. 385, pl. 2. f. 2 (1853), ♀.

Danais œnopia, Felder, Wien. ent. Monats. iii. p. 182, pl. 4. f. 2 (1859).

Hab. Celebes.

6. Ideopsis chloris.

Danais chloris, Felder, Wien. ent. Monats. iv. p. 231 (1860); id. Reise der Novara, Lep. ii. p. 351, pl. 42. f. 3, ♂ (1867).

Danais salvini, Butler, P. Z. S. 1866, p. 172, f. 2, ♀.

Hab. Moluccas; Gilolo, Batchian; Celebes.

7. Ideopsis inuncta.

Danais inuncta, Butler, P. Z. S. 1865, p. 481, ♀, 1866, pl. 4. f. 7, ♀.

Ideopsis phæstis, Felder, Reise der Novara, Lep. ii. p. 351, pl. 43 f. 5 (1867), ♀.

Hab. Waigiou.

Genus Radena.

Radena, Moore, Lep. of Ceylon, i. p. 3 (1880); Distant, Rhopal. Malayana, p. 9 (1882).

Danaus (part.), Latreille, Gen. Crust. et Ins. iv. p. 201 (1809).

Hestia (part.), Hübner, Verz. bek. Schm.ett. p. 15 (1816).

Danais (*Radena*), Marshall & de Nicéville, Butt. of India, Burmah, &c. p. 32 (1882).

Fore wing moderately long, triangular; first subcostal branch emitted at about one third before end of the cell and anastomosed to the costal in the middle, second branch emitted immediately before end of the cell, third and fourth at equal distances beyond; discocellulars concave, upper slightly bent before the middle, producing a very short discoidal spur within the cell from the angle, lower discocellular slender at its upper end; upper radial from end of cell, in a line with subcostal, lower from the middle; medians at equal distances apart; submedian with a short, slender, lower basal veinlet. Hind wing broad, somewhat triangular; costal margin long, nearly straight, abdominal margin long; costal vein very convex from the base and then extending straight along edge of the margin; cell long, broad; subcostals and median branches very wide apart. No scent-pouch in male. Antennæ longer than in allied genera, and with a more gradually thickened and blunt club. Apical joint of palpi long.

Larva (*R. juventa*) with two pairs of fleshy filaments.

Type *R. similis*.

1. Radena similis.

Papilio similis, Linn. Mus. Ulr. p. 299; id. Syst. Nat. x. p. 479 (1758); Clerck, Icones, i. pl. 16. f. 3 (1759); Fabr. Ent. Syst. iii. p. 58.

Danais similis, Butler, Catal. Lep. Fabr. Brit. Mus. p. 6.

Danais similis, Aurivillius, Kongl. Vet.-Akad. Handl. 1882, p. 100.

Papilio aventina, Cramer, Pap. Exot. i. pl. 59. f. F (1779).

Danais aventina, Godt. Enc. Méth. ix. p. 191.

Danais chinensis, Felder, Verh. zool.-bot. Gesellsch. xii. p. 488 (1862).

Hab. Hongkong; Formosa.

2. Radena persimilis. (Plate XXXI. fig. 4.)

Danais persimilis, Moore, Proc. Zool. Soc. 1879, p. 136.

Hab. Siam (Bankok). In coll. F. Moore.

3. Radena vulgaris.

Danais vulgaris, Butler, Entom. Monthly Mag. xi. p. 164 (1874) Moore, Proc. Zool. Soc. 1878, p. 822.

Radena vulgaris, Distant, Rhopalocera Malayana, p. 10, pl. i. f. 8 (1882).

Danais (*Radena*) *vulgaris*, Marshall & de Nicéville, Butt. of India &c. p. 32, fig. ♂ ♀ (1882).

Euplœa similis, Zinken-Sommer, Nova Acta Acad. Cur. 1831, p. 175.

Hab. British Burmah (Tenasserim); Malay peninsula (Prov. Wellesley, Malacca); Penang; Sumatra; Java (*Horsfield*); Billiton; Borneo (Sarawak, Banjermassen).

4. Radena nicobarica.

Danais similis, var. *nicobarica*, Wood-Mason, Journ. Asiat. Soc. Bengal, 1881, p. 225, 1882, p. 14.

Danais (*Radena*) *nicobarica*, Marshall & de Nicéville, Butt. of India &c. p. 34, fig. ♀.

Hab. Great Nicobars.

5. Radena exprompta.

Danais exprompta, Butler, Entom. Monthly Mag. xi. p. 164 (1874).

Radena exprompta, Moore, Lep. of Ceylon, i. p. 4, pl. 2. f. 1 (1880).

Danais (*Radena*) *exprompta*, Marshall & de Nicéville, Butt. of India &c. p. 33 (1882).

Hab. Ceylon.

6. Radena juventa. (Plate XXIX. fig. 1, ♂.)

Papilio juventa, Cramer, Pap. Exot. ii. pl. 188. f. B (1780).

Danais juventa, Godt. Enc. Méth. ix. p. 193; Moore, Catal. Lep. Mus. E.I. Co. i. p. 122, pl. 4. f. 4, 4*a*.

Hab. Java, Lombock, Billiton.

7. Radena manillana, n. sp.

Male. From typical specimens of *R. juventa* this differs on the fore wing in the discoidal streaks being nearer together, and in some touching at their lower end; the medial discal spots are more oval in shape. On the hind wing the discal spots are also comparatively narrower and longer, and the two marginal series of spots are disposed in a more curved series.

Female. With more widely separated markings, the medial discal spots conspicuously oval, and the submarginal row composed of larger spots: the hind wing has much narrower streaks and comparatively larger marginal spots.

Expanse 3 inches.

Hab. Manilla, South Luzon. In coll. F. Moore and G. Semper.

8. Radena luzonica, n. sp.

Intermediate between *R. juventa* and *R. ishma*. Fore wing with all the markings smaller and more widely separated than in *R. ishma*, the second and third upper discal and the two opposite submarginal spots separated as in *R. juventa*, the two large discal smaller

than in either of those species, the two bands between the median and submedian well separated in the female; the submarginal spots are comparatively larger than in *R. juventa*. Hind wing with widely separated basal markings as in *R. ishma*, the two marginal rows of spots less distinct than in *R. juventa*.

Expanse, ♂ $3\frac{1}{4}$, ♀ 3 inches.

Hab. North Luzon. In coll. F. Moore, G. Semper, and British Museum.

9. Radena ishma.

Danais ishma, Butler, Cist. Entom. i. p. 2 (1869); id. Lep. Exot. i. p. 53, pl. 20. f. 3 (1871), ♂.

Hab. Gilolo, Celebes.

10. Radena meganira.

Danais meganira, Godt. Enc. Méth. ix. p. 192 (1819); Boisd. Faune de l'Océanie, ix. p. 104; Blanch. Voy. Pôle Sud, p. 387, pl. 2. f. 4, ♀,

? *Papilio claviger*, Gmelin, Syst. Nat. i. 5. p. 2289 (1788–93); Zschach, Mus. Lesk. Ent. p. 89 (1788).

Hab. Ceram.

11. Radena curtisi, n. sp.

Allied to *R. sobrinoides*. Fore wing with a very slender, long, basal, discoidal streak; a smaller irregular constricted spot at the end, the two upper discal series of spots much smaller, the two streaks below the cell narrower. Hind wing with similar basal interspaces; the discoidal more entire and its bifid streak defined; the two marginal rows of spots much smaller.

Expanse, ♂ $2\frac{3}{10}$, ♀ 3 inches.

Hab. Batchian (*Curtis*). In coll. British Museum.

12. Radena sobrina.

Danais sobrina, Boisduval, Faune de l'Océanie, ix. p. 103, pl. 4. f. 3 (1832).

Hab. New Guinea, Aru.

13. Radena purpurata.

Danais purpurata, Butler, P. Z. S. 1866, p. 52. f. 2; Kirsch, Mitth. Zool. Mus. Dresden, i. p. 114 (1877).

Hab. New Guinea.

14. Radena turneri.

Danais turneri, Butler, Ann. Nat. Hist. ser. 5, vol. i. p. 480 (1878).

Hab. New Guinea, Thursday Island.

15. Radena sobrinoides.

Danais sobrinoides, Butler, Ann. Nat. Hist. ser. 5, vol. x. p. 37 (1882).

Hab. New Britain; New Ireland.

CADYTIS, n. g.

Fore wing more triangular than in *Amauris*, the costal margin straighter; cell narrower; discocellulars less obliquely convex, lower discocellular slender at upper end; no discoidal spur. Hind wing slightly produced at the apex, exterior margin somewhat straight anteriorly and convex posteriorly, abdominal margin very long. *Male*: hind wing with the area on both sides of the submedian vein numerously covered with fine long hairs.

CADYTIS VASHTI.

Danais vashti, Butler, Cist. Ent. i. p. 1 (1869).
Amauris vashti, Butler, Lep. Exot. i. pl. 21. f. 1 (1871).
Hab. Old Calabar.

B. *One "sexual mark" or scent-producing organ on hind wing.*

a. Sexual mark on submedian vein.

Genus AMAURIS.

Amauris, Hübner, Verz. bek. Schmett. p. 14 (1816); Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 240.
Danais (sect. i.), Doubleday, Gen. D. Lep. p. 89; Butler, P. Z. S. 1866, p. 43.

Fore wing long, narrow, triangular, apex convex, exterior margin very oblique, posterior margin straight; subcostal vein straight, first branch emitted at one fourth before, and second branch close to, end of the cell, second extending to near apex; third branch trifid; cell long, narrow; discocellulars obliquely concave, upper longest, lower slender at upper end; upper radial emitted from end of the cell; submedian vein undulated, emitting a short slender veinlet from below near the base. Hind wing broadly conical; costal margin nearly straight, exterior margin convex, abdominal margin long; costal vein much curved at base and extending along edge of the margin; first subcostal emitted at half length of the cell, much curved, second branch quite straight; cell broad; discocellulars very oblique. Male with a lengthened oval glandular patch or scent-producing organ on the submedian vein near its end, where the vein is also slightly swollen; abdomen with a pair of large flat conchiform anal claspers, from above which are exserted a pair of large pencils of hair. Antennæ long with moderately well-formed club. Palpi ascending to vertex, flattened; first and second joints pilose beneath; third joint rather long, projected forward in front of the head, squamose. Legs long, slender.
Type *A. niavius*.

1. AMAURIS NIAVIUS.

Papilio niavius, Linn. Mus. Ulr. p. 253 (1764); id. Syst. Nat. i. 2, p. 766 (1767); Clerck, Icon. ii. pl. 32. f. 2 (1764); Cramer,

Pap. Exot. ii. pl. 2. f. F, G; Beauvois, Ins. Afr. et Am., Lép. p. 238, pl. 6. f. 1*a*, 1*b*.

Amauris niavius, Hübner, Verz. bek. Schmett. p. 15; Aurivillius, Kongl. Vet.-Akad. Handl. 1882, p. 63.

Danais niavius, Godart, Enc. Méth. ix. p. 182; Butler, Catal. Lep. Fabr. B. M. p. 4.

Hab. Sierra Leone; Ashanti; Angola.

2. Amauris dominicana.

Danais dominicanus, Trimen, Trans. Ent. Soc. 1879, p. 323.

Danais niavius, var., Trimen, Trans. Linn. Soc. xxvi. pp. 511, 521, pl. 42. f. 6, ♂.

Hab. Natal.

3. Amauris damocles.

Papilio damocles, Beauvois, Ins. Afr. et Am., Lép. p. 239, pl. 6. f. 3*a*, *b* (1805).

Danais damocles, Godart, Enc. Méth. ix. p. 182.

Hab. Sierra Leone; Angola.

4. Amauris hecate.

Danais hecate, Butler, P. Z. S. 1866, p. 44.

Euplœa niavius, Doubleday & Hewits. Gen. D. Lep. pl. 11. f. 3.

Hab. Ashanti.

5. Amauris inferna.

Amauris inferna, Butler, P. Z. S. 1871, p. 79; id. Lep. Exot. p. 86, pl. 33. f. 2 (1872).

Hab. Inbonzo.

6. Amauris tartarea.

Amauris tartarea, Mabille, Bull. Soc. Zool. France, 1876, p. 199.

Hab. Congo.

7. Amauris hyalites.

Amauris hyalites, Butler, Cistula Ent. i. p. 209 (1874).

Hab. Ambriz.

8. Amauris egialea.

Papilio egialea, Cramer, Pap. Exot. ii. pl. 192. f. D (1779).

Amauris egialea, Hübner, Verz. bek. Schmett. p. 14.

Danais egialea, Butler, Catal. Fabr. Lep. B. M. p. 4; Trimen, Trans. Linn. Soc. xxvi. p. 506.

Papilio damocles, Fabricius, Spec. Ins. p. 102 (1781); id. Ent. Syst. iii. 1, p. 41 (1793).

Hab. Sierra Leone; Cape Palmas; Ashantee.

9. Amauris gabunica.

Amauris damocles, var. *gabunica*, Aurivillius, Ent. Tidskr. ii. p. 39 (1881).

Hab. Gaboon.

10. Amauris nossima.

Danais nossima, Ward, Ent. Monthly Mag. vi. p. 225 (1870); Afr. Lep. p. 5, pl. 5. f. 1 (1873).

Hab. Madagascar.

11. Amauris ochlea.

Danais ochlea, Boisduval, Voy. Deleg. ii. p. 589 (1847); Trimen, Rhop. Afr. Austr. p. 85, pl. 2. f. 6.

Amauris ochlea, Reakirt, Proc. Acad. Sci. Phil. 1866, p. 241.

Hab. Natal.

Nebroda, n. g.

Fore wing comparatively shorter and more regularly triangular than in *Amauris*; costa straighter, first subcostal branch emitted nearer end of the cell; discocellulars shorter; cell narrower at end. Hind wing shorter, the apex and exterior margin more convex; cell less triangular; first and second subcostal branches emitted much further apart. Male with a small, prominent, short oval glandular patch or scent-producing organ near end of submedian vein. Abdomen shorter; anal conchiform valves prominent. Antennæ stouter.

"Larva with five pairs of rather long fleshy filaments" (*Trimen*).

Type *N. echeria*.

1. Nebroda echeria.

Papilio echeria, Stoll, Suppl. Cram. Pap. Exot. pl. 29. f. 2, 2 *b* (1790).

Amauris echeria, Hübner, Verz. bek. Schmett. p. 14.

Danais echeria, Trimen, Rhop. Afr. Austr. i. p. 86; Trans. Linn. Soc. xxvi. p. 506, pl. 42. f. 3.

Danais vaillantiana, Godart, Enc. Méth. ix. p. 183 (1819).

Hab. South Africa (Cape colony).

2. Nebroda albimaculata.

Amauris albimaculata, Butler, Ann. Nat. Hist. ser. 4, vol. xvi. 1875, p. 394.

Danais echeria, var., Trimen, Trans. Linn. Soc. xxvi. p. 507, pl. 42. f. 7.

Hab. South Africa (Natal).

Berethis, n. g.

Fore wing short, triangular; costal margin very slightly arched; exterior margin very oblique; posterior margin straight; cell narrow; second subcostal emitted immediately before end of the cell; upper discocellular short and slightly curved, lower oblique. Hind wing broadly conical; exterior margin uneven, convex hind-

ward; costal vein much curved from base; cell broad, triangular; discocellulars very oblique, upper short. Male with a single elongated indistinct glandular patch or scent-producing organ at end of submedian vein; anal conchs similar to those in *Amauris*. Antennæ thicker at the tip.

BERETHIS PHÆDON.

Papilio phædon, Fabricius, Ent. Syst. Suppl. p. 423 (1798).

Danais phædon, Godart, Enc. Méth. ix. p. 183; Butler, Catal. Lep. Fabr. B. M. p. 4.

Euplœa phædon, Boisduval, Faune Ent. de Mad. p. 37, pl. 3. f. 3 (1833).

Hab. Mauritius; Madagascar.

LINTORATA, n. g.

Wings of similar shape to *Tirumala*. Hind wing with a broad spatula-shaped scent-pouch on submedian vein.

LINTORATA MENADENSIS, n. sp.

Male. Dark purplish brown: fore wing with pale brownish-ochreous streaks along lower part of the cell, three contiguous large elongated spots below the cell between the median veins, two central discal smaller round spots, above which is a subapical series of slender oval spots, of which latter the three upper are smallest; a submarginal row of small round spots and a marginal lower row of very small spots. Hind wing with pale brownish-ochreous streaks within and below the cell, a contiguous discal series of five small spots, a submarginal row, and a marginal row of very small spots.

Expanse $3\frac{3}{4}$ inches.

Hab. Menado, S. Celebes (*Wallace*). In coll. Oxford University Museum.

b. "Sexual mark" or scent-producing organ between the median and submedian veins.

MELINDA, n. g.

Differs from *Tirumala* in the fore wing having the costa less arched, the apex narrow and prolonged, the exterior margin being more oblique and concave in the middle, the posterior margin shorter, and the cell comparatively narrower and longer. Hind wing broader, the abdominal margin longer, the cell broader and longer, the discocellular straighter, the glandular pouch being similar. Palpi more densely covered with longer hair; antennæ more gradually clavate and less pointed at tip.

MELINDA FORMOSA.

Danais formosa, Godman, Proc. Zool. Soc. 1880, p. 183, pl. 19. f. 1.

Hab. East Africa (Nguru hills, Zanzibar district).

Genus Tirumala.

Tirumala, Moore, Lep. of Ceylon, i. p. 4 (1880).

Danais (*Tirumala*), Marshall & de Nicéville, Butt. of India &c. p. 45 (1882).

Fore wing broad, triangular; first subcostal branch emitted at one fifth before end of the cell and free from the costal, second at end of the cell; discocellulars bent acutely inward in the middle below upper radial, and emitting a short point within the cell from the angle; lower discocellular slender near its upper end; submedian with a short lower basal veinlet. Hind wing broadly oval, exterior margin very convex; costal vein slightly curved; cell short and anteriorly oblique; second subcostal branch emitted nearer the first, and upper median nearer the middle branch than in *Radena*. Male with an open scent-pouch between the lower median and submedian veins, the pendent sac of which is prominent on the underside of the wing (the interior of the pouch containing, in the dried specimen, numerous white filaments). Antennæ shorter than in *Radena*, the club also shorter and tip more pointed. Apical joint of palpi shorter.

Larva with two pair of fleshy filaments.

Type *T. limniace*, Linn.

1. Tirumala petiverana.

Danais petiverana, Doubleday & Hewitson, Diurn. Lep. p. 93, pl. 12. f. 1 (1847); v. d. Decken, Reise Ostafr. p. 368 (1873).

Danais leonora, Butler, Proc. Zool. Soc. 1866, p. 51; Lep. Exotica, p. 53, pl. 20. f. 2.

Petiver, Gazoph. i. pl. 3. f. 4.

Hab. West Africa (Angola).

2. Tirumala limniace.

Papilio limniace, Cramer, Pap. Exot. i. pl. 59. f. D, E (1775), ♀.

Danais limniacæ, Godart, Enc. Méth. ix. p. 191 (1819).

Tirumala limniaceæ, Moore, Lep. of Ceylon, i. p. 4, pl. 1. f. 3.

Danais limniace, Semper, Mus. Godeffroy, xiv. Lep. pl. 8. f. 6, ♂.

Danais (*Tirumala*) *limniace*, Marshall & de Nicéville, Butt. of India, p. 47 (1882).

Papilio exoticus, Gmelin, Syst. Nat. i. 5, p. 2289 (1788–93); Zschach, Mus. Lesk. Ent. p. 89 (1788).

Papilio similis, (part.), Fabricius, Ent. Syst. iii. p. 58 (1793).

Danais leopardus, Butler, P. Z. S. 1866, p. 52.

Petiver, Gazophyl. i. pl. 92. f. 13.

Hab. India; Ceylon; Nicobars; British Burmah; Cambodia; Hongkong; Formosa.

3. Tirumala orientalis.

Danais orientalis, Semper, Mus. Godeffroy, xiv. p. 140, pl. 8. fig. 5, ♂ (1879).

Hab. Philippines (*Luzon*).

4. Tirumala melissa.

Papilio melissa, Cramer, Pap. Exot. iv. pl. 377, f. C, D (1781), ♂ · Herbst, Pap. pl. 125. f. 3, 4.

Hab. Java (*Horsf.*). In coll. British Museum.

5. Tirumala conjuncta, n. sp. (Plate XXIX. fig. 2, ♂.)

Euplœa limniace, Horsfield, Catal. Lep. Mus. E.I. C. pl. 3. f. 6, larva (1829).

Danais limniacæ, Moore, Catal. Lep. Mus. E.I. C. i. p. 121, pl. 4. f. 3, 3 *a*.

Limnas (*Thal.*) *limniace*, Hübn. Exot. Schmett. i. pl. 19, ♂.

Allied to *T. melissa*. Smaller in size, but of the same colour. Differs on the fore wing in the terminal discoidal and discal markings being broader, the duplex streak between the lower median and submedian confluent, and the row of submarginal spots smaller and round. Hind wing with broader and slightly longer markings, the interspaces between the veins being entirely covered, leaving but a very slender single line between, within the cell, and one beneath it; submarginal row of spots more rounded.

Expanse $2\frac{1}{4}$ to 3 inches.

Hab. Java (*Horsfield*). In coll. British Museum and F. Moore.

This appears to be the common Java form, several specimens having been reared from the larvæ by the late Dr. Horsfield.

6. Tirumala choaspes.

Danais choaspes, Butler, P. Z. S. 1866, p. 52.

Hab. Celebes (Macassar).

7. Tirumala ino.

Danais ino, Butler, P. Z. S. 1871, p. 79, ♀.

Hab. Sula (*Wallace*). In coll. H. G. Smith.

8. Tirumala gautama. (Plate XXXI. fig. 3.)

Danais gautama, Moore, Ann. Nat. Hist. ser. 4, vol. xx. p. 43, ♀ (1877).

Danais (*Tirumala*) *gautama*, Marshall & de Nicéville, Butt. of India &c. p. 45 (1882).

Hab. British Burmah (Arakan, Moulmein, Mergui). In coll. F. Moore.

9. Tirumala septentrionis. (Plate XXIX. fig. 3, ♂.)

Danais septentrionis, Butler, Entom. Monthly Mag. xi. p. 163 (1874); Semper, Mus. Godeffroy, xiv. Lep. pl. 8. f. 7, ♂; Distant, Rhop. Malayana, p. 16, pl. 1. f. 9 (1882).

Tirumala septentrionis, Moore, Lep. of Ceylon, i. p. 5, pl. 1. f. 2 (1881).

Danais (*Tirumala*) *septentrionis*, Marshall & de Nicéville, Butt. of India, p. 48, pl. 6. f. 8, ♂ ♀ (1882).

Hab. India; Ceylon; British Burmah; Siam; Malay peninsula; Penang; Java (*Horsf.*).

10. Tirumala microsticta.

Danais microsticta, Butler, Entom. Monthly Mag. xi. p. 163 (1874).

Hab. Borneo (type); Java (*Horsf.*); Nias. In coll. British Museum.

A single specimen collected in Java by Dr. Horsfield is identical with the Bornean type.

11. Tirumala leucoptera.

Danais leucoptera, Butler, Entom. Monthly Mag. xi. p. 163 (1874).

Hab. Dorey, New Guinea.

12. Tirumala ishmoides, n. sp.

Male. Fore wing comparatively narrower and more produced at the apex than in allies, with a very narrow basal streak and a small spot near lower end of the cell, a fusiform and a widely separated clavate streak above the submedian, two medial discal oval spots, and three slender subcostal streaks, all placed in regular successive order; submarginal and marginal spots small. Hind wing with the basal markings very similar to those in *T. leucoptera*, but somewhat broader, the costal and penultimate streaks being larger; two marginal series of spots small and slender.

Expanse $3\frac{1}{2}$ inches.

Hab. Celebes. In coll. G. Semper.

Has a similarity of form and pattern of markings to *Radena ishma*, also from the Celebes.

13. Tirumala hamata.

Euplœa hamata, M'Leay, King's Survey of Australia, ii. App. p. 46 (1827).

Danais hamata, Semper, Mus. Godeffroy, xiv. Lep. p. 139, pl. 8. f. 1, 2, ♂ (1879).

Danais australis, Blanchard, Voy. Pôle Sud, Ins. p. 388, pl. 2. f. 5, 6 (1837–40).

Hab. Australia.

14. Tirumala angustata, n. sp.

Intermediate between *T. hamata* and *T. melittula*. Fore wing with the discoidal and basal streak very slender, the terminal spot narrower than in *T. hamata* and much more so than in *T. melittula*; the two transverse discal series of spots disposed as in *T. melittula*, except that the upper elongated streaks are longer and the lower spot is widely disconnected from the basal streak below the cell; the marginal spots are slightly larger. Hind wing with similar but somewhat larger markings to those in *T. melittula*, the dark central streak within the cell less forked and not touching the discocellular veinlet.

Expanse $2\frac{2}{8}$ to $2\frac{5}{8}$ inches.

Hab. Tongatabu, Friendly Islands. In coll. British Museum.

15. Tirumala melittula.

Danais melittula, H. Schäff. Stettin. ent. Zeit. 1869, p. 70; Semper, Mus. Godeffroy, xiv. Lep. pl. 8. f. 3, ♂.

Hab. Upolu, Samoa Islands.

16. Tirumala obscurata.

Danais obscurata, Butler, P. Z. S. 1874, p. 275.

Hab. Upolu, Solomon Islands.

17. Tirumala moderata.

Danais moderata, Butler, P. Z. S. 1875, p. 611.

Hab. New Hebrides (Vate).

18. Tirumala neptunia.

Danais neptunia, Felder, Reise Novara, Lep. ii. p. 349, pl. 43. f. 1 (1867); Semper, Mus. Godeffroy, xiv. Lep. pl. 8. f. 4, ♂ (1879).

Hab Fiji Islands.

19. Tirumala claribella.

Danais claribella, Butler, Ann. Nat. Hist. ser. 5, vol. x. p. 36, ♀ (1882).

Hab. Fiji Islands.

Nasuma, n. g.

Male. Fore wing triangular; costa long, apex much produced; exterior margin very oblique, convex below the apex and waved hindward; posterior margin very short; discocellulars convex, emitting a short discoidal spur within the cell in a line with lower radial. Hind wing broad, triangularly oval; exterior margin sinuous, oblique, and prolonged hindward; anterior and abdominal margin long; glandular pouch or scent-producing organ small, and covered by a projecting lappet.

Nasuma ismare.

Papilio ismare, Cramer, Pap. Exot. iii. pl. 279. f. E, F (1782), ♂.

Danais ismare, Godart, Enc. Méth. ix. p. 190.

Danais ismareola, Butler, P. Z. S. 1866, p. 50, ♀; id. p. 172, t. 1 (hermaphrodite).

Hab. Moluccas (Ternate); Amboina.

Genus Anosia.

Anosia[1], Hübner, Verz. bek. Schmett. p. 16 (1816).

[1] Hübner's first species of *Anosia* (*archippus*, Cram. pl. 16. f. *a*, *b*) is congeneric with the species of his genus *Callianira* (Hübn. Verz. p. 38); and his second species (*misippus*, Linn.) is referable to his genus *Esoptria* (Hübn. p. 45), both of which species were placed in the genus *Anosia* by Hübner, owing to their resemblance to the others. The consequent exclusion of these two species from the genus thus necessarily limits it to the remainder; his third species (*menippe*) therefore becomes the type. Hübner's own action, in subsequently using the generic name for a conspecific insect, fixes this third-cited species as the type.

Danaida[1], Latreille, Hist. Nat. des Crust. et Ins. xiv. p. 108 (1805) ; Scudder, Bull. Buff. Soc. N. H. 1875, p. 245.

Euplœa (part.), Fabricius, Illiger's Mag. vi. p. 280 (1807).

Danais, Latreille, Illiger's Mag. vi. p. 292 (1807) ; Strecker, Butt. & Moths N. Amer. p. 105 (1878).

Danaus (part.)[2], Latr. Gen. Crust. et Ins. iv. p. 201 (1809) ; id. Consid. Gén. Crust. et Ins. p. 352 (1810).

Danaus, Scudder, Syst. Revis. Amer. Butt. p. 7, Peabody Acad. of Sci. (1871).

Fore wing lengthened, triangular; apex prolonged ; exterior margin very oblique ; cell long ; upper discocellular bent inward, deeply concave and angled before reaching the lower radial, emitting a short discoidal spur within the cell from the point ; lower discocellular very oblique, submedian with a short lower basal veinlet. Hind wing oval ; cell long ; discocellulars long and very oblique. Male with a small pouch or scent-producing organ close to lower median vein, much less prominent than in *Salatura* (*S. genutia*). Thorax and base of abdomen very hairy. Antennæ with a well-formed stout club at the tip. Palpi stout, densely hairy to the tip. Middle and hind legs black.

Larva (figured by Smith-Abbott) with two pairs of fleshy filaments.

Type *P. plexippus* (*P. archippus*, Fabr.).

1. Anosia plexippus.

Papilio plexippus, Linn. Syst. Nat. ed. x. p. 471 (1758) ; Mus. Ulr. p. 262 (1764) ; Syst. Nat. ed. xii. p. 767 (1767) ; Cram. Pap. Exot. iii. pl. 206. f. E, F, ♀ (1779) ; Fabr. Ent. Syst. iii. p. 49 (1793) ; Herbst, Pap. pl. 156. f. 1, 2 ; De Beauvoir, Ins. Afr. et Amér. p. 172, pl. 4. f. *a*, *b* ; Turton, Syst. of Ent. ii. p. 59 (1806).

Danaida plexippus, Latreille, Hist. Nat. Crust. et Ins. xiv. p. 108 (1805) ; Scudder, Bull. Buffalo Soc. Nat. Sci. 1875, p. 245.

Euplœa plexippus, Fabricius, Illiger's Mag. vi. p. 280 (1807).

Limnas ferrugineus plexippus, Hübner, Samml. exot. Schmett. Bd. i. pl. 20. f. 2 (1806).

Danais plexippus, Latreille, Illiger's Mag. vi. p. 292 (1807) ; Strecker, Lep. N. Amer. p. 105 (1878).

Danaus plexippus, Latreille, Gen. Crust. et Ins. iv. p. 201 (1809) ; id. Consid. Gén. C. et Ins. p. 353 (1810) ; Say, Amer. Ent. iii. pl. 54, ♂ (1828) ; Peale, Lep. Amer. i. pl. 7 (1833) ; Scudder, Syst. Rev. Amer. Butt. Peabody Acad. Sci. 1871, p. 7.

Idea plexippus, Eschscholtz, Kotzeb. Reise, iii. p. 209, pl. 7. f. 14, *a*, *b* (1821).

Papilio erippus, Cramer, Pap. Exot. i. pl. 3. f. A, B, ♂ (1775).

Danais erippus, Semper, Mus. Godeffroy, xiv. Lep. p. 41 (1879).

Papilio archippus, Fabricius, Ent. Syst. iii. p. 49 (1793) ; Smith,.

[1] Preoccupied in botany. Also a plural name, and therefore inadmissible.

[2] The name "*Danaus*" having been adopted in a generic sense by Esper, Panzer, &c. for species of *Pierinæ*, previous to its adoption by Latreille in 1807, the name "*Danais*" cannot be retained in this subfamily of Butterflies. (See note to subfamily *Euplœinæ*, p. 213, *antè*.

Abbott, Ins. Georgia, i. pl. 6 (1797); Brown, Const. Miscellany, Butt. i. p. 156, pl. 23 (1832).

Danais archippus, Godt. Enc. Méth. ix. p. 184; Boisd. et Lec. Lep. Amér. Sept. p. 137, pl. 40 (1833); Harris, Ins. Injur. to Veg., Flint's ed. p. 280; Saunders, Canadian Ent. v. pp. 4–8, figs. 1–5 (1873); Edwards, Birds of N. A. i. p. 9; Butler, Catal. Fabrician Lep. B. M. p. 5.

Anosia menippe, Hübner, Verz. bek. Schmett. p. 16 (1816).

Anosia megalippe, Hübner, Samml. exot. Schmett. Bd. ii. pl. 7, ♂ (1820–21).

Petiver, Mus. p. 52, no. 527 (1695).

Catesby, Nat. Hist. Carolina, ii. p. 88, pl. 88 (1743).

Hab. N. America (southern parts of British Possessions, United States); Bermudas; Antilles; Mexico; Central and South America as far as Rio.

2. Anosia plexaure.

Danais plexaure, Godart, Enc. Méth. ix. p. 184 (1819).

?*Danais brasiliensis*, Capr. Ann. Ent. Belg. 1874, p. 22.

Hab. Brazil.

3. Anosia cleophile.

Danais cleophile, Godart, Enc. Méth. ix. p. 185 (1819); Doubleday & Hewits. D. Lep. pl. 12. f. 3.

Hab. Haiti; Jamaica.

Tasitia, n. g.

Anosia (part), Hübner, Verz. bek. Sch. p. 15.

Anosia, Scudder, Bull. Buff. Soc. N. H. 1875, p. 246.

Fore wing shorter and less regularly triangular in form than in *Anosia* (*Plexippus*); costa arched at the base, exterior margin slightly convex below the apex; cell comparatively shorter and broader; discocellulars shorter, concave in the middle, emitting a short discoidal spur within the cell opposite the lower radial; lower discocellular slender at its upper end. Hind wing narrower, much more convex internally, the costal and abdominal margins shorter; cell shorter and broader; first subcostal branch emitted further from the base; discocellulars shorter, the upper much bent. Male with a larger but shorter and more conspicuous scent-pouch close to the lower median vein. Antennæ shorter, club slender at tip. Palpi smaller, more slender and less hairy. Middle and hind legs black.

Larva (*T. berenice*, figured by Smith Abbott, and *T. eresimus*, figured by Stoll) with three pairs of fleshy filaments.

Type *T. gilippus*, Cram.

1. Tasitia berenice.

Papilio berenice, Cramer, Pap. Exot. iii. pl. 205. f. E, F (1779).

Danais berenice, Boisd. et Lec. Lép. Amér. Sept. p. 134, pl. 39 (1833); Butler, Catal. Lep. Fabr. B. M. p. 4; Proc. Zool. Soc.

1866, p. 454; Strecker, Lep. N. Amer. p. 106 (1878); Godman & Salvin, Biologia Centr.-Amer. Lep. p. 3.

Anosia berenice, Scudder, Bull. Buffalo Soc. Nat. Hist. p. 246 (1875).

Papilio erippus, Fabr. Mant. Ins. ii. p. 27 (nec Cram.).

Anosia erippe, Hübn. Verz. bek. Schmett. p. 16.

Danais erippe, Godt. Enc. Méth. ix. p. 186.

Papilio gilippus, Smith, Abbott, Lep. Ins. Georgia, i. pl. 7 (nec Cram.).

Hab. North America (Southern United States, New Mexico).

2. TASITIA STRIGOSA.

Danais strigosa, Bates, Ent. Monthly Mag. i. p. 32 (1864); Distant, Proc. Zool. Soc. 1876, p. 10.

Anosia strigosa, Scudder, Bull. Buff. Soc. N. H. p. 246.

Hab. North America (Texas).

3. TASITIA JAMAICENSIS.

Danais jamaicensis, Bates, Ent. Monthly Mag. i. p. 33 (1864); Butler, Proc. Zool. Soc. 1866, p. 454.

Sloane's 'Jamaica,' ii. p. 214, pl. 239. f. 5, 6 (1725).

Hab. Jamaica.

4. TASITIA GILIPPUS.

Papilio gilippus, Cramer, Pap. Exot. i. pl. 26. f. E, F, ♀ (1775).

Danais gilippe, Godt. Enc. Méth. ix. p. 186.

Danais gilippus, Butler, Catal. Fabrician Lep. B. M. p. 4.

Limnas ferrugineus vincetoxici, Hübn. Samml. exot. Schmett. Bd. i. pl. 23 (1806).

Anosia vincetoxici, Hübn. Verz. bek. Schmett. p. 16.

Idea manuja, Esch. Kotzeb. Reise, iii. p. 209, pl. 7. f. 13, *a*, *b* (1821).

Hab. South America.

5. TASITIA THERSIPPUS.

Danais thersippus, Bates, Proc. Zool. Soc. 1863, p. 243.

Hab. ——?

6. TASITIA CLEOTHERA.

Danais cleothera, Godt. Enc. Méth. ix. p. 185 (1819); Doubleday et Hewits. D. Lep. pl. 12. f. 2; Godman et Salvin, Biologia Centr.-Amer., Lep. p. 3.

Hab. Central America.

7. TASITIA ERESIMUS.

Papilio eresimus, Cramer, Pap. Exot. ii. pl. 175. f. G,H (1777); Stoll, Suppl. Cram. pl. 6. f. 4, larva.

Anosia eresima, Hübn. Verz. bek. Schmett. p. 16.

Danais eresimus, Butler, Catal. Fabrician Lep. B. M. p. 5; Proc. Zool. Soc. 1866, p. 454.

Hab. South America.

8. Tasitia xanthippus.

Danais xanthippus, Felder, Wien. Ent. Monats. 1860, p. 100.
Hab. Brazil.

9. Tasitia hermippus.

Danais hermippus, Felder, Reise der Novara, Lep. ii. p. 348 (1867).
Hab. South America (New Granada; Bogota).

Genus Limnas.

Limnas[1], Hübner, Tentamen, i. p. 1 (1806), nec Boisd. et auct.
Danais (*Salatura*, sect. A), Marshall and deNicéville, Butt. of India &c. p. 49 (1882).

Fore wing narrower, and of a comparatively more lengthened triangular form than in *Salatura* (*genutia*); costa less arched and the apex more produced, exterior margin less uneven. Hind wing regularly convex exteriorly and the margin more even; costal vein abruptly arched; cell shorter at its upper end; discocellulars bent inward near the middle, emitting a short discoidal spur or veinlet within the cell from the angle, lower discocellular slender at its upper end, lower radial from middle of discocellulars opposite the inner spur. Pouch in male similar. Antennæ stouter, with a well formed thick club.

Larva with three pairs of fleshy filaments.

Type *L. chrysippus*.

1. Limnas chrysippus.

Papilio chrysippus, Linnæus, Syst. Nat. (1758) p. 471; Mus. Ulr. p. 263 (1764); Syst. Nat. i. 2, p. 767 (1767); Cramer, Pap. Exot. ii. pl. 118. f. B, C; Fabricius, Ent. Syst. iii. 1, p. 50; Hübn. S. eur. Schmett. i. pl. 133. f. 678–9.

Limnas ferr. chrysippus, Hübn. Samml. exot. Schmett. Bd. i. pl. 22. f. 1–4 (1806).

Limnas chrysippus, Hübner, Tentamen, i. p. 1 (1806).

Euplœa chrysippus, Hübner, Verz. bek. Schmett. p. 15; Herbst, Pap. pl. 155. f. 1, 2; Ochsenh. pl. 4. f. 11, 12; Zink. Somm. Nova Acta Acad. Nat. Cur. 1831, p. 173.

Danais chrysippus, Godart, Enc. Méth. ix. p. 187; Lép. de France, p. 106, pl. 27. f. 1, 2; Latreille, Dict. d'Hist. Nat. 2nd ed. pl. 9, p. 118; Moore, Catal. Lep. Mus. E.I. C. i. p. 126; Trimen, Rhop. Africæ Austral. p. 88; Butler, Catal. Lep. Fabr. B. M. p. 5; Distant, Rhop. Malayana, p. 20, pl. i. fig. 10.

Salatura chrysippus, Moore, Lep. of Ceylon, i. p. 7, pl. 3. f. 1.

Papilio ægyptius, Schreb. Ins. p. 9, f. 11, 12 (1759).

Danaida chrysippus, Aurivillius, Kong. Vet.-Akad. Handl. 1882, p. 70.

[1] Hübner having adopted this name for *P. chrysippus* and other species of Danainæ in the Samml. exot. Schmett., thus fixed its type and its restriction to the present group of Butterflies.

Danais (*Salatura*) *chrysippus*, Marshall and de Nicéville, Butt. of India, p. 50, pl. 6. fig. 10, ♂ ♀ (1882).

Papilio asclepiadis, Gagl. Atti Instit. Incorr. Napol. i. p. 155, pl. 1 (1811); Ochsenh. Schmett. Europ. iv. p. 124 (1816).

Hab. S.E. Europe, W. and S. Africa. Madagascar, Rodriguez, Johanna, Mauritius, Socotra, Turkey in Asia, Persia, Afghanistan, Candahar, India, Ceylon, Nicobars, Burmah, Siam, Malay peninsula, Penang, Singapore, Sumatra, Lombock, Kaiva, S. China, Hainan, Formosa, Philippines.

2. Limnas alcippus.

Papilio alcippus, Cramer, Pap. Exot. ii. pl. 127. f. E, F (1777); Fabr. Ent. Syst. iii. 1, p. 50; Herbst, Pap. pl. 155. f. 5, 6.

Danais alcippus, Godart, Enc. Méth. ix. p. 188; Lép. de France, p. 110, pl. 17. f. 3; Peters, Reise n. Mossambique, Zool. p. 370 (1862); Butler, Catal. Lep. Fabr. B. M. p. 5.

Hab. Sierra Leone; Ashanti.

3. Limnas alcippoides, n. sp. (Plate XXXI. fig. 1.)

? *Danais alcippus*, Marshall and de Nicéville, Butt. of India, p. 51.

From W. African specimens of *L. alcippus* this differs in the fore wing having a broader series of white subapical oblique spots, the white spot below these (between the upper and middle median veins) is much larger; and there is a lower discal spot on the red area between the middle and lower medians, which is not present in any West-African specimens that I have seen. The hind wing has somewhat less white than the African specimens.

Expanse 3 inches.

Hab. Nepal (*Gen. Ramsay*). In coll. F. Moore.

Marshall and de Nicéville refer to *L. alcippus* as occurring in the plains of Northern India (Sind, Nurpur in the Punjab), in the N.W. Provinces (Lucknow), and also at Rangoon.

4. Limnas dorippus.

Euplœa dorippus, Klug, Symb. Phys. pl. 48. f. 1–5 (1829).

Danais dorippus, Peters, Reise n. Mossamb. Zool. p. 371 (1862); Oberthür, Etud. Ent. 1878, p. 24, pl. 1. f. 5.

Danais (*Salatura*) *dorippus*, Marshall and de Nicéville, Butt. of India, p. 52 (1882).

Hab. E. Africa (Zanzibar); Arabia, S. Persia, Beluchistan, Western India (Sind, Kutch). In coll. F. Moore.

5. Limnas bataviana, n. sp.

Euplœa chrysippus, Horsfield, Catal. Lep. Mus. E.I. C. pl. 2. figs. 9, 9*a*, larva (1828).

Danais chrysippus, Moore, Catal. Lep. Mus. E.I. C. i. pl. 4. figs. 7. 7*a*, larva (1857).

Near to *L. cratippus*. Differs in the fore wing being com-

paratively more produced at the apex, the dark apical area of a less blackish tint, spreading less over the disk, and has there a more regular scalloped border; marginal rows of spots similar; there are two lower discal white spots in the male, making three from below the oblique subapical band, the upper spot being larger (in *L. cratippus* there is only one spot); at the end of the cell is also a more or less distinct spot; hind wing with a distinct row of white spots on the blackish marginal band.

Expanse $2\frac{1}{4}$ to 3 inches.

Hab. Java (*Horsf.*). In colls. British Museum and F. Moore.

6. Limnas bowringi, n. sp.

Differs from *L. chrysippus* on the fore wing in the subapical macular band being composed of four somewhat longer spots, and having two lower spots of large size (larger than in any specimen of *L. chrysippus* under examination); the two costal spots are also somewhat longer, and the submarginal middle spots are larger.

Expanse, ♂ ♀ $3\frac{1}{2}$ inches.

Hab. Hongkong. In coll. British Museum.

A female variety (?) from Hongkong, also in the British-Museum collection, has a large dentate spot between the small spot beyond the end of the cell and the subapical series.

7. Limnas cratippus.

Danais cratippus, Felder, Sitzb. Akad. Wiss., math.-nat. Cl. xl. p. 449 (1860).

Hab. Amboina (type); Ceram.

8. Limnas petilia.

Papilio petilia, Stoll, Cram. Pap. Exot. Suppl. pl. 28. f. 3 (1790).

Danais petilia, Godart, Enc. Méth. ix. p. 189; Semper, Mus. Godeffroy, xiv. p. 141 (1879).

Hab. Australia (New Holland, Moreton Bay).

Genus Salatura.

Salatura, Moore, Lep. of Ceylon, i. p. 5 (1880).

Euplœa (part), Hübner, Verz. bek. Schmett. p. 15 (1816).

Danais (part), Godart, Doubleday, Hewitson, Butler, Distant.

Danais (*Salatura*, sect. B), Marshall and de Nicéville, Butt. of India &c. p. 49 (1882).

Fore wing subtriangular, costa slightly arched, apex more or less rounded, exterior margin waved, oblique and slightly convex in the middle, posterior margin slightly recurved; costal vein extending to two thirds the wing; first subcostal branch emitted at one fifth before end of the cell, second at the end of the cell, third and fourth at equal distance beyond its end; cell long; upper discocellular bent inward and angled at lower end above the lower radial, emitting a short discoidal spur within the cell from the lower angle; lower discocellular slender at its upper end, outwardly oblique; radials

from angles of upper discocellular; median branches widely separated, submedian slightly recurved, with a short slender veinlet emitted from below near the base. Hind wing broadly oval; exterior margin rounded, slightly sinuous; costal vein short, curved upward; precostal straight; first subcostal emitted before end of the cell and curving upward before the apex, second slightly bent at end of the cell; discocellulars very oblique, upper shortest and slightly concave, radial from their middle; second median branch from near end of the cell, lower bent near its base; submedian nearly straight; internal recurved. Male with an open scent-pouch between lower median and submedian veins. Body long; palpi pilose; middle and hind legs slender; antennæ with a gradually formed lengthened slender club.

Larva with three pairs of fleshy filaments.

Type *S. genutia*.

1. Salatura genutia.

Papilio genutia, Cramer, Pap. Exot. iii. pl. 206. f. C, D (1779); Herbst, Pap. pl. 154. f. 1, 2.

Limnas ferruginea genutia, Hübner, Samml. exot. Schmett. Bd. i. pl. 21. f. 1, 2 (1806).

Salatura genutia, Moore, Lep. of Ceylon, i. p. 6, pl. 4. f. 2 (1880).

Danais genutia, Distant, Trans. Ent. Soc. Lond. 1877, p. 3; Rhop. Malayana, p. 18, pl. 2. fig. 2, ♂ (1882).

Danais (*Salatura*) *genutia*, Marshall and de Nicéville, Butt. of India, p. 52 (1882).

Papilio plexippus (part), Fabr. Spec. Ins. p. 55.

Euplœa plexippus (part), Hübn. Verz. bek. Schmett. p. 15.

Danais plexippus (part), Godt. Enc. Méth. ix. p. 186.

Danais plexippus, Doubleday and Hewits. Gen. D. L. p. 92; Moore, Catal. Lep. Mus. E.I. C. i. p. 124; Butler, P. Z. S. 1866, p. 47.

Danaida plexippus, Aurivillius, Kongl. Vet.-Akad. Handl. 1882, p. 69.

Hab. India, Ceylon, Andamans, Nicobars, Burmah, Siam, Malay peninsula, Penang, South China, Hainan, Formosa, Hongkong, Philippines.

2. Salatura nipalensis. (Plate XXXI. fig. 2.)

Danais nipalensis, Moore, Ann. Nat. Hist. 1877, p. 43.

Danais (*Salatura*) *nipalensis*, Marshall and de Nicéville, Butt. of India, p. 54 (1882).

Hab. Nepal (*Gen. Ramsay*). In coll. F. Moore.

3. Salatura intensa, n. sp.

Euplœa plexippus, Horsfield, Catal. Lep. Mus. E.I. C. pl. 3. f. 8, larva (1829); Zink. Somm. Nova Acta Acad. Nat. Cur. 1831, p. 172.

Danais philene, Moore, Catal. Lep. Mus. E.I. C. i. p. 124, pl. 4. f. 5, 5*a*.

Smaller than *S. genutia*. Differs from it in the red interspace

on both wings being of a much darker tint. On the fore wing there is no red spot between the upper and middle median veins, which is always present in *S. genutia*; the subapical white spots are also narrower. On the hind wing there is only a single row of marginal spots, which are very small, and in the male obsolescent.

Expanse, ♂ $2\frac{3}{8}$, ♀ $2\frac{6}{8}$ inches.

Hab. Java (*Horsfield*); Lombok; Borneo. In colls. British Museum and F. Moore.

Note. The larva of this species figured by Horsfield (*l. c.*) is erroneously (?) represented with only two pairs of fleshy filaments.

4. Salatura nesippus.

Danais nesippus, Felder, Verh. zool.-bot. Ges. xii. p. 486 (1862); Reise der Novara, Lep. ii. p. 347; Moore, P.Z.S. 1877, p. 582.

Danais (*Salatura*) *nesippus*, Marshall & de Nicéville, Butt. of India, p. 55 (1882).

Hab. Nicobars (Sambelong, Nancowry, Kar Nicobar).

5. Salatura melanippus.

Papilio melanippus, Cramer, Pap. Exot. ii. pl. 127. f. A, B (1777); Herbst, pl. 155. f. 7, 8.

Danais melanippus, Godart, Enc. Méth. ix. p. 189.

Hab. Java (*Horsfield*).

6. Salatura intermedia, n. sp.

Danais genutia, var., Distant, Rhopaloc. Malayana, p. 18. pl. 2. f. 3, ♂.

Intermediate between *S. genutia* and *S. sumatrana*. Fore wing, in *both sexes*, like that of *S. genutia*, except that the black median veins are narrower. Hind wing, in *both sexes*, with similar breadth and length of interspaces between the veins as in *S. genutia*; but these interspaces are white, and their outer ends only slightly suffused with red; the marginal white spots are larger than those in *G. sumatrana*.

Expanse, ♂ ♀ $3\frac{3}{8}$ inches.

Hab. Malacca, Singapore. In colls. Brit. Museum and F. Moore.

7. Salatura hegesippus.

Papilio hegesippus, Cramer, Pap. Exot. ii. pl. 180. f. A (1777), ♀; Fabricius, Ent. Syst. iii. p. 52.

Danais hegesippus, Godart, Enc. Méth. ix. p. 189.

Danais (*Salatura*) *hegesippus*, Marshall & de Nicéville, Butt. of India, p. 55 (1882).

Danais melanippus, Gray, Lep. Ins. of Nepal, p. 10, pl. 9. f. 1 (1846).

Danais melanippus, var. *hegesippus*, Distant, Rhop. Malayana, p. 19, pl. 2. f. 1 (1882).

Hab. Eastern Bengal, Orissa, British Burmah, Malay peninsula, Penang.

Note. The specimen of *S. hegesippus* in the British-Museum col-

lection labelled "Java" was found, upon examination of the original register, to have been received from Penang.

8. Salatura sumatrana, n. sp.

Smaller than *S. hegesippus*. Differs in both sexes in the fore wing being marked like *S. intensa*, and the black median vein extending narrowly to the base, not broadly so as in *S. hegisippus*: the hind wing has broader white interspaces between the veins, these white streaks all being red at their outer end; the marginal rows of white spots are smaller and are disposed in a more regularly linear succession, not placed in obliquely opposite pairs as in *S. hegesippus*.

Expanse, ♂ ♀ $2\frac{3}{4}$ inches.

Hab. Sumatra. In coll. F. Moore.

9. Salatura lotis.

Papilio lotis, Cramer, Pap. Exot. iii. pl. 230, f. D, E (1780).
Danais lotis, Godart, Enc. Méth. ix. p. 189.
Hestia thoë, Hübner, Verz. bek. Schmett. p. 15 (1816).
Hab. Borneo.

10. Salatura edmondi.

Danais edmondii, Bougainville, Voy. Thétis, ii. p. 344, pl. 44. f. 3 (1837).
Hab. Philippines (Bohol, Mindanao, Luzon).

11. Salatura nubila.

Danais nubila, Butler, P. Z. S. 1866, p. 171.
Hab. Gilolo.

11 *a*. Salatura philene.

Papilio philene, Cramer, Pap. Exot. iv. pl. 375. figs. A, B (1782).
Danais philene, Godart, Enc. Méth. ix. p. 187.
Hab. Amboina. In coll. British Museum.

12. Salatura artenice.

Papilio artenice, Cramer, Pap. Exot. iv. pl. 375. f. C, D (1782).
Danais artenice, Godart, Enc. Méth. ix. p. 187.
Hab. ? Java.

13. Salatura mysolica, n. sp.

Intermediate between *S. artenice* and *S. nubila*. Comparatively larger than *S. nubila*. On the fore wing the red streak is reduced to a very slender line along lower end of the cell; the subapical spots are all much larger. On the hind wing the dull red colour is restricted to the middle of the wing, and extends to only half the space between end of the cell and outer margin

Expanse $3\frac{3}{8}$ inches.

Hab. Mysol (*Wallace*). In coll. British Museum.

14. Salatura conspicua.

Danais conspicua, Butler, P. Z. S. 1866, p. 49, pl. 4. f. 2.
Danais leucoglene, Felder, Reise d. Novara, Lep. ii. p. 347, pl. 43. f. 2 (1867).
Hab. Celebes.

15. Salatura fulgurata.

Danais fulgurata, Butler, P. Z. S. 1866, p. 48, pl. 4. f. 1; Kirsch, Mitth. zool. Mus. Dresden, i. p. 114 (1877).
Hab. Celebes.

16. Salatura chionippe.

Euplœa chionippe, Hübner, Samml. exot. Schmett. Bd. ii. pl. 6. f. 1, 4, ♂ ♀ (1820–24).
Idea abigar, Esch. Kotzeb. Reise, iii. p. 209, pl. 7. f. 12, *a*, *b* (1821), ♀.
Danais chionippe, Butler, P. Z. S. 1866, p. 171.
Danais cecilia, Bougainville, Voy. Thétis, ii. p. 342, pl. 44. f. 1, ♂ (1837).
Hab. Philippines (Manilla, Luzon).

17. Salatura affinis.

Papilio affinis, Fabricius, Syst. Ent. p. 511 (1775); Ent. Syst. iii. 1, p. 58 (1793); Donovan, Ins. of Ind. pl. 25. f. 2.
Danais affinis, Godart, Enc. Méth. ix. p. 182; Blanchard, Voy. Pôle Sud, p. 389, pl. 2. f. 7; Butler, Catal. Lep. Fabr. B. M. p. 6.
Hab. Ceram; Amboyna; Cape York, N. Australia.

18. Salatura aruana, n. sp.

Allied to *S. affinis*. Male and female of a uniform ferruginous brown; fore wing with similar markings, the white spots smaller, the discal interspaces dull white and much restricted, the upper space confined to a very small triangular streak above base of lower median, and the lower space mostly suffused with brown; on the hind wing the dull white area is transversely much narrower and is broadly traversed by brown veins.
Expanse, ♂ $1\frac{3}{4}$, ♀ 2 inches.
Hab. Aru (*Wallace*). In colls. F. Moore and British Museum.

19. Salatura nigrita, n. sp.

Male. Smaller than *S. affinis* from Ceram and Cape York. Blacker in colour, and the markings of a duller white tint. On the fore wing the white subapical spots are more regular in succession, the penultimate lower spot square, the white interspaces below the cell somewhat narrower; hind wing with the medial white area narrower.
Expanse $2\frac{1}{4}$ inches.
Hab. Australia. In coll. British Museum.

20. Salatura ferruginea.

Danais ferruginea, Butler, Ann. Nat. Hist. ser. 4, vol. xviii. p. 240 (1876).

Hab. N. Guinea.

21. Salatura mytilene.

Danais mytilene, Felder, Wien. ent. Monats. iv. p. 232 (1860).

Danais pullata, Butler, Proc. Zool. Soc. 1866, p. 47, f. 1, ♂.

Hab. New Guinea (Dorey).

21 *a*. Salatura adustus.

Danais adustus, Godman & Salvin, P. Z. S. 1882, p. 755.

Hab. New Ireland.

22. Salatura insolata.

Danais insolata, Butler, Ann. Nat. Hist. ser. 4, vol. v. p. 360 (1870); Brenchley's Voy. Curaçoa, p. 468, pl. 48. f. 1.

Hab. Solomon Islands.

23. Salatura decipiens.

Salatura decipiens, Butler, Ann. Nat. Hist. ser. 5, vol. x. p. 37 (1882).

Hab. Solomon Islands.

24. Salatura biseriata.

Salatura biseriata, Butler, Ann. Nat. Hist. ser. 5, vol. x. p. 37 (1882).

Hab. Duke-of-York Island.

C. *Two "sexual marks" or scent-producing organs on hind wing.*

a. Sexual mark on both the median and submedian veins.

Ravadeba, n. g.

Danais (*Parantica*), sect. A, part., Marshall & de Nicéville, Butt. of India &c. p. 35 (1882).

Male with a shorter and broader fore wing than in *Bahora*, the apex being more blunt and the exterior margin less oblique; disco-cellulars convexly angular in the middle, emitting a very short point within the cell; lower radial from below the angle: hind wing more regularly quadrate, the costa being shorter, the exterior margin angularly produced in the middle, and the anal angle more prominent; scent-pouches similar.

Type *R. cleona*.

1. Ravadeba cleona.

Papilio cleona, Cramer, Pap. Exot. iv. pl. 377. fig. F (1781).

Danais cleona, Blanchard, Voy. Pôle Sud, p. 386, pl. 2. f. 3 (1853).

Danais (*Parantica*) *cleona*, Marshall & de Nicéville, Butt. of India &c. p. 36 (1882).

Hab. Celebes.

2. Ravadeba lutescens.

Danais lutescens, Butler, Proc. Zool. Soc. 1866, p. 172, fig. 3, ♀.

Hab. Ceram; Bouru; Batchian.

3. Ravadeba phyle.

Danais phyle, Felder, Wien. ent. Monats. 1863, p. 105; Novara-Reise, Lep. ii. p. 348, pl. 42. fig. 8, ♂.

Hab. Philippines (Luzon, 4000 to 5000 feet).

Bahora, n. g.

Danais (*Parantica*, Sect. A, part.), Marshall & de Nicéville, Butt. of India &c. p. 35.

Male with a comparatively narrower fore wing than in *Parantica*; fore wing with the subcostal emitted at one fifth before end of the cell, first branch free; discocellulars bent below the upper radial, producing a short spur within the cell from the angle; lower discocellular slender at its upper end: hind wing more arched near base of the costa, the exterior margin more oblique below the apex and convexly angular beyond the middle; abdominal margin also longer; pouches similar. Female with more rounded exterior margins.

Type *B. philomela*.

1. Bahora aspasia.

Papilio aspasia, Fabricius, Mant. Ins. ii. p. 15 (1787); Ent. Syst. iii. p. 170.

Danais aspasia, Butler, Catal. Fabr. Lep. B. M. p. 7.

Hab. Borneo.

2. Bahora philomela.

Euplœa philomela, Zink.-Som. Nova Acta Acad. Nat. Cur. xv. p. 184, pl. 16. fig. 17 (1831).

Euplœa philomela, Butler, P. Z. S. 1866, p. 456.

Danais (*Parantica*) *philomela*, Marshall & de Nicéville, Butt. of India &c. p. 36.

Hab. Java; ? Billiton.

3. Bahora crocea.

Danais crocea, Butler, Proc. Zool. Soc. 1866, p. 57, pl. iv. fig. 5.

Danais aspasia, var. *crocea*, Distant, Rhopalocera Malayana, p. 13, pl. 1. fig. 7 (1882).

Danais (*Parantica*) *crocea*, Marshall & de Nicéville, Butt. of India &c. p. 37 (1882), pl. 5. f. 6, ♂.

Hab. British Burmah, Kyouk Phyoo; Mergui (*Anderson*); Malay peninsula; Province Wellesley; Penang (*Distant*); Malacca; Singapore (*Wallace*); Sumatra (*Buxton*).

Phirdana, n. g.

Fore wing very short, broad, triangular, apex convex, exterior margin oblique, cell comparatively long and broad at the end; dis-

cocellulars bent below the upper radial, producing a short spur within the cell from the angle; lower discocellular slender at its upper end. Hind wing short, broad, oval; cell long; costal vein much arched at the base, first subcostal branch and lower median branch emitted opposite to one another before half length of the cell, both being comparatively longer than in *Parantica*. Male with two spatula-shaped scent-pouches, a large one on lower median vein and a small one on submedian vein. Antennæ stout, with a well-formed thick club. Palpi small, pointed at tip.

PHIRDANA PUMILA.

Danais pumila, Boisd. Bull. Ent. Soc. France, 1859, p. 156.

Danais mariana, Butler, Ann. Nat. Hist. ser. 3, vol. xvi. p. 397 (1865); Proc. Zool. Soc. 1866, p. 58, pl. 4. fig. 6.

Hab. New Caledonia (Loyalty Island).

PHIRDANA HEBRIDESIA.

Danais hebridesia, Butler, P. Z. S. 1875, p. 610, pl. 67. f. 6, ♀.

Hab. New Hebrides (Aneiteum).

ASTHIPA, n. g.

Fore wing somewhat short, apex broad and very convex, exterior margin slightly oblique; first subcostal branch emitted at one fourth before end of the cell, free; second branch at a short distance before its end, recurved; discocellulars bent below the upper radial, producing a very short point within the cell from the angle, lower discocellular slender at its upper end; upper radial from near subcostal, lower from above the middle angle. Hind wing broad, convex externally, costal margin slightly curved, cell narrowed at both ends. Male with a long spatula-shaped scent-pouch on lower median vein and a small (? rudimentary) pouch near inner side of submedian vein. Antennæ with a long slender tip. Palpi small, tip pointed.

Type *A. vitrina*.

1. ASTHIPA MELANOLEUCA

Danais melanoleuca, Moore, Proc. Zool. Soc. 1877, p. 581, pl. 58. f. 3.

Danais (*Parantica*) *melanoleuca*, Marshall & de Nicéville, Butt. of India &c. p. 38 (1882).

Hab. South Andaman Isles.

2. ASTHIPA VITRINA.

Danais vitrina, Felder, Wien. ent. Monats. v. p. 300 (1861), ♂; Reise der Novara, Lep. ii. p. 530, pl. 43. f. 3, 4.

Danais œnone, Butler, Proc. Zool. Soc. 1865, p. 433, pl. 25. f. 6, 1866, p. 56, ♂.

Hab. Philippine Islands.

3. Asthipa gloriola.

Danais gloriola, Butler, Proc. Zool. Soc. 1866, p. 56, pl. 4. f. 3, 4.

Danais citrina, Felder, Reise d. Nov. Lep. ii. p. 350, pl. 42. f. 5, 6, 7 (1867).

Hab. Aru Islands.

4. Asthipa schenkii.

Danais schenkii, Koch, Indo-Austr. Lep. Fauna, p. 107 (1865).

Hab. Solomon Islands.

Genus Parantica.

Parantica, Moore, Lep. of Ceylon, i. p. 7 (1880).

Danais (*Parantica*, sect. B), Marshall & de Nicéville, Butt. of India &c. p. 35.

Fore wing long, narrow, hind margin lengthened; first subcostal branch emitted at one fourth before end of the cell and touching the costal near its end, second branch from immediately before end of the cell; upper discocellular bent below the lower radial, producing a short discoidal spur within the cell from the angle, lower discocellular slender at its upper end; cell long and narrow. Hind wing somewhat elongated, exterior margin very convex, abdominal margin short, costal vein arched from the base and extending along edge of the costa; cell very long and narrow. Male with two spatula-shaped scent-pouches, one (the largest) being on the lower median vein, the other (about one fourth its size) on the submedian vein, near their ends, from which innumerable short white filaments project between the scales, each pouch showing on the underside by a slender swelling of the veins at that part. Antennæ with lengthened slender tip. Apical joint of the palpi short, small, pilose. Larva with two pairs of fleshy filaments.

Type *P. aglea*.

1. Parantica melanoides.

Danais aglea (part.), auctorum.

Danais (*Parantica*) *aglea*, Marshall & de Nicéville, Butt. of India &c. p. 38, pl. 6. fig. 7, ♂ ♀ (1882).

Larger than typical *P. aglea*; the markings broader and larger, and like those in *Caduga melaneus*: on the fore wing the discoidal streak broadly occupies the cell, and that beneath the cell has a central longitudinal line, not being divided as in *P. aglea*.

Expanse 3½ inches.

Hab. Himalayas, Mussoorie (*Hutton*); Cashmere (*Reid*); Nepal (*Ramsay*); Darjeeling; Cherra (*Atkinson*); Assam; Upper Tenasserim; Siam; Hainan Island; ? Formosa.

Tenasserim and Hainan specimens (males) are alike somewhat smaller than those from the Himalayas.

2. Parantica aglea.

Papilio aglea, Cramer, Pap. Exot. iv. pl. 377. fig. E (1782).

Danaida aglea, Aurivillius, Kongl. Vet.-Akad. Handl. 1882, p. 99.

Danais ceylanica, Felder, Verh. zool.-bot. Gesellsch. xii. p. 479 (1862).

Parantica ceylonica, Moore, Lep. of Ceylon, i. p. 8, pl. 2. f. 2, 2*a*.

Danais (*Parantica*) *ceylanica* et *grammica*, Marshall & de Nicéville, Butt. of India &c. pp. 39, 40 (1882).

Papilio similis (part.), Linn. Mus. Ulr. p. 299.

Hab. Southern India (Bombay, Malabar, Travancore, Bangolore); Ceylon.

Cramer cites Java and Coromandel as the localities of his *P. aglea*, but figures the male of the S. Indian form. The Javan form is *P. grammica*, Bd.

3. Parantica grammica.

Danais grammica, Boisduval, Spec. Gén. Lép. i. pl. xi. fig. 10, ♂ (1836).

Hab. Java. In coll. F. Moore.

4. Parantica agleoides.

Danais agleoides, Felder, Wien. ent. Monats. iv. p. 398 (1860); zool.-bot. Gesellsch. 1862, p. 486; Wood-Mason, Journ. Asiatic Soc. Bengal, 1881, p. 224; Distant, Rhop. Malayana, p. 15, pl. 1. fig. 5 (1882).

Danais (*Parantica*) *agleoides*, Marshall & de Nicéville, Butt. of India &c. p. 41.

Danais grammica, Doubleday, Diurnal Lep. p. 92; Moore, Catal. Lep. Mus. E.I. C. i. p. 122; Butler, P. Z. S. 1866, p. 55.

Hab. British Burmah (Rangoon, Mergui); Malay peninsula; Nicobars; Java (*Horsf.*); Sumatra.

5. Parantica eryx.

Papilio eryx, Fabricius, Ent. Syst. Supp. p. 423 (1789).

Danais eryx, Butler, Catal. Fabrician Lep. B. M. p. 7, pl. 1. f. 2 (1870).

Hab. Borneo.

Mangalisa, n. g.

Fore wing triangular, costa much arched towards apex; upper discocellular bent below the lower radial and emitting a short spur within the cell from the angle. Hind wing oval; male with one scent-pouch on submedian vein, composed of the dilated or swollen vein and adjacent spatula-shaped patch, also a half spatular patch between it and the lower median vein, but no swelling of the vein or corresponding half of the patch on its other side. Venation similar to *Caduga*. Antennæ with a gradually thickened blunt club. Palpi large; apical joint very long, pointed, pilose.

MANGALISA ALBATA.

Euplœa albata, Zinken-Sommer, Nova Acta Acad. Curios. 1831, p. 181, pl. 16. f. 16.

Hab. Java.

Sexual mark on submedian and internal veins.

CADUGA, n. g.

Danais (*Chittira*, sect. A, part.), Marshall & de Nicéville, Butt. of India &c. p. 42 (1882).

Fore wing elongated, narrow, more regularly triangular; first subcostal branch emitted at one fourth before end of the cell, free; second branch from end of the cell; cell long and narrow; upper discocellular bent below lower radial, producing a short spur from the angle within the cell; lower discocellular slender at its upper end. Hind wing elongated, abdominal margin short, costa straight; costal vein long, slightly curved and extending along the margin; cell long and narrow. Male with two spatula-shaped pouch-marks, one, the largest, being on the submedian vein, the other on the internal vein, near the end; these pouch-marks are formed by a lengthened but slight dilatation or swelling of the veins, the adjacent spatula-shaped surface being composed of very compactly disposed scales of a different shape and form, (? between) which project innumerable delicate short white filaments; a similar patch of scales is also observable on the lower median vein, but it is not accompanied by the swollen vein. Antennæ with a regularly formed clavate tip. Apical joint of palpi large, stout, pointed.

Type *C. tytia*, Gray.

1. CADUGA TYTIA.

Euplœa tytia, Gray, Lep. Ins. of Nepal, p. 9, pl. 9. fig. 2 (1833).

Danais tytia, Doubleday, List. Lep. Brit. Mus. i. p. 50 (1844); Doubleday & Hewitson, Diurn. Lep. pl. 12. fig. 4.

Danais (*Chittira*) *tytia*, Marshall & de Nicéville, Butt. of India &c. p. 42 (1882).

Danais sita, Kollar, Hügel's Kaschmir, iv. p. 424, pl. 6 (1844).

Hab. N.W. and E. Himalayas (Cashmir to Sikkim); Khasia hills; Tenasserim.

2. CADUGA NIPHONICA, n. sp.

Differs from typical *C. tytia* in its larger size: fore wing very black, with broader subapical streaks; comparatively smaller and more ovate upper discal spots; the lower discal outer spot also smaller, the latter being more transversely narrow and less quadrate in shape; the submarginal row of spots are larger, and the marginal row more distinct: hind wing in male with all the veins and their borders blackish, the spatular glandular patch and streaks therefrom very black; no red bifid streak within the cell, which is replaced by

a very indistinct slender grey line; the marginal spots are more or less obsolete.

Expanse, ♂ $4\frac{1}{4}$, ♀ $3\frac{3}{4}$ inches.

Hab. Japan (*Nikko*). In coll. British Museum.

A specimen of a female in my own collection, from North Formosa, agrees very nearly with the species from Japan. Mr. W. B. Pryer collected specimens of what may probably be this species in Chekiang, North China.

3. Caduga loochooana, n. sp.

Female. Duller-coloured than Japanese or Formosan specimens: fore wing pale brown; the subapical spots shorter, the discal spots regularly quadrate in shape, the submarginal series being disposed in a more regular linear row and transversely narrower: hind wing paler, but of a brighter red; the cell cleft by a distinct straight red streak starting directly from the discocellular veinlet.

Expanse, ♀ $3\frac{4}{5}$ inches.

Hab. Loo Choo Islands. In coll. British Museum.

4. Caduga swinhoei, n. sp.

Differs from *C. melaneus* in its shorter and comparatively more regularly triangular fore wing and shorter hind wing, the markings being of a decidedly darker tint of blue; they are similar on both wings, but smaller, narrower, and with broader black interspaces; on the underside the hind wing is of a chestnut-red colour.

Expanse $3\frac{1}{2}$ inches.

Hab. North Formosa (*R. Swinhoe*). In coll. F. Moore.

5. Caduga melaneus.

Papilio melaneus, Cramer, Pap. Exot. i. pl. 30. f. D (1775).

Danais melaneus, Godart, Enc. Méth. ix. p. 192.

Danais melaneus (part.), Distant, Rhop. Malayana, p. 14.

Euplœa melanea, Zinken-Sommer, Nova Acta Acad. Cur. Nat. 1831, p. 179.

Danais (*Chittira*) *melaneus*, Marshall and de Nicéville, Butt. of India &c. p. 43, pl. 5. f. 5, ♂ ♀.

Hestia ephyre, Hübner, Verz. bek. Schmett. p. 15 (1816).

Hab. Eastern Himalayas; Nepal (*Ramsay*); Darjiling (*Atkinson*); Sylhet; Khasia hills; British Burmah; Malay peninsula; Penang; Singapore.

6. Caduga pseudomelaneus, n. sp.

Differs from Malay specimens of *C. melaneus* in the fore wing having the upper elongated discal streak shorter, the upper discal spot larger, the two middle spots also larger, the two lowest more quadrate, the outer spot being excavated on its exterior edge, and the posterior streak below the cell shorter and traversed by a slender black streak: hind wing with the inner discal series of spots smaller, leaving a wider discal interspace between them and the marginal

row, which are also smaller; the cell is also traversed by a black bifid line.

Expanse $3\frac{1}{4}$ inches.

Hab. Java. In coll. H. G. Smith.

An intermediate form between *C. melaneus* and *C. larissa*.

7. Caduga larissa.

Danais larissa, Felder, Novara-Reise, Lep. ii. p. 349 (1867).

Hab. Java (*Horsfield*). In colls. British Museum and F. Moore.

8. Caduga banksii, n. sp.

Danais melaneus, Distant, Rhop. Malayana, pl. 1. f. 6?

Much larger than the Javan *C. larissa*: all the markings comparatively narrower, thus giving wider interspaces; on the fore wing the subapical streaks are one third longer; on the hind wing the streaks are conspicuously narrower, and the discoidal streak has a well-formed forked central line.

Expanse, ♂ $3\frac{1}{2}$, ♀ $3\frac{3}{4}$ inches.

Hab. Sumatra. In colls. F. Moore and H. S. Smith.

A faded specimen of this species is in the Banksian collection at the British Museum. Has also been collected in Sumatra by Mr. Carl Bock.

9. Caduga luzonensis.

Danais luzonensis, Felder, Wien. ent. Monats. 1863, p. 106.

Danais erebus, Butler, Proc. Zool. Soc. 1866, p. 54, f. 3.

Hab. Philippines (Luzon, Bohol, Mindanao).

10. Caduga nilgiriensis.

Danais nilgiriensis, Moore, Ann. Nat. Hist. ser. 4, vol. xx. p. 44 (1877).

Danais (*Chittira*) *nilgiriensis*, Marshall and Nicéville, Butt. of India &c. p. 43, pl. 6. f. 9 ♂ (1882).

Hab. Southern India (Nilgiri hills).

Genus Chittira, Moore.

Chittira, Moore, Lep. of Ceylon, i. p. 8 (1880).

Danais (*Chittira*), sect. B. part., Marshall and de Nicéville, Butt. of India &c. p. 42 (1882).

Fore wing somewhat short and broad; costa much arched; hind margin long; discocellulars bent in the middle below the lower radial, and producing a short spur within the cell from the angle; hind wing broadly oval, very convex exteriorly. *Male* with two scent-pouches, one on the submedian vein composed of the dilated or swollen vein and spatula-shaped adjacent patch, the other on the internal vein, which is there dilated but without any adjacent patch. Venation similar to *Caduga*. Antennæ with a tolerably thick club. Palpi large; third joint pointed, pilose.

CHITTIRA FUMATA.

Danais fumata, Butler, Proc. Zool. Soc. 1866, p. 53.

Chittira fumata, Moore, Lep. of Ceylon, i. p. 9, pl. 4. f. 1.

Danais taprobana, Felder, Reise d. Novara, Lep. ii. p. 349, pl. 42. f. 4 (1867).

Danais (*Chittira*) *taprobana*, Marshall and de Nicéville, Butt. of India &c. p. 44 (1882).

Hab. Ceylon.

May 1, 1883.

Prof. Flower, LL.D., F.R.S., President, in the Chair.

The Secretary read an extract from a letter addressed to him by Mr. W. L. Crowther, C.M.Z.S., dated Hobart Town, February 23, 1883.

In reply to inquiries addressed to him as to the possibility of obtaining living specimens of the Thylacine (*Thylacinus cynocephalus*), Mr. Crowther stated that the animal was certainly not yet extinct. The hawkers from the interior of the colony frequently offered its skins for sale in Hobart Town, thus showing that the skin-men with whom they deal were acquainted with the localities where they are still found. Mr. Crowther promised to use his best endeavours to obtain specimens for the Society.

The Secretary exhibited on behalf of Mr. H. Whitely the skin of a rare Bird of Paradise (*Rhipidornis gulielmi-tertii*). This specimen had been received in a collection which had been made in the island of Waigiou. So far as was known, this was only the fourth example of this species which had ever been obtained. The type specimen from which the figure in Gould's 'Birds of New Guinea' had been taken was in the Museum of Warsaw.

In reference to Dr. Meyer's communication (P. Z. S. 1882, p. 688) on the desirability of adopting a standard of nomenclature for the description of the colours of natural objects, and Mr. Harting's previous communication on the same subject (P. Z. S. 1882, p. 391), the Secretary laid upon the table a copy of Radde's 'Internationale Farbenskala,' which had been recently added to the Society's Library, and explained the way in which it was intended to be used.

The following papers were read :—